



# **STIC Search Report**

**EIC 1700**

**STIC Database Tracking Number: 174042**

**TO: Dawn Garrett**  
**Location: REM 10C79**  
**Art Unit : 1774**  
**December 15, 2005**

**Case Serial Number: 10/729712**

**From: Les Henderson**  
**Location: EIC 1700**  
**REM 4B28 / 4A30**  
**Phone: 571-272-2538**

**Leslie.henderson@uspto.gov**

## **Search Notes**

DEC 13 2005

## SEARCH REQUEST FORM

Pat. &amp; T.M. Office Scientific and Technical Information Center

Requester's Full Name: DAWN GARRETT Examiner #: 76107 Date: 12/12/2005  
 Art Unit: 1774 Phone Number: 5-1523 Serial Number: 10/729,712  
 Mail Box and Bldg/Room Location: Rm 10C79 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Organic Electroluminescent Devices

Inventors (please provide full names):

BARBARA LUSSIER, JOSEPH DEATON, DAVID GIESSEN

Earliest Priority Filing Date: 12/5/2003

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search

the organometallic complex described in claim 1 and more specifically the formula (i) compounds described in claim 5.

If the search is too broad, please limit to specific groups/variables described on "Election" page as necessary to narrow the answer set.

Thank you.

SEE CLAIMS & ELECTION ATTACHED.

## STAFF USE ONLY

*****	Type of Search	Vendors and cost where applicable
Searcher: <u>LH</u>	NA Sequence (#) _____	STN <u>\$ 580.35</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>2</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr. Link _____
Date Completed: <u>12/15/50</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>30</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: <u>30</u>	Patent Family _____	WWW/Internet _____
Online Time: <u>140</u>	Other _____	Other (specify) _____

=> d his ful

(FILE 'HOME' ENTERED AT 08:04:31 ON 15 DEC 2005)

FILE 'STNGUIDE' ENTERED AT 08:04:38 ON 15 DEC 2005

FILE 'HCAPLUS' ENTERED AT 08:05:00 ON 15 DEC 2005

E US20050123795/PN

L1 1 SEA ABB=ON PLU=ON US20050123795/PN  
D ALL  
SEL RN

FILE 'REGISTRY' ENTERED AT 08:06:58 ON 15 DEC 2005

L2 7 SEA ABB=ON PLU=ON (13141-42-9/BI OR 27600-87-9/BI OR  
4105-21-9/BI OR 504-29-0/BI OR 56983-95-0/BI OR  
853179-42-7/BI OR 853179-43-8/BI)  
D SCAN  
D L2 1-7 RN STR

FILE 'LREGISTRY' ENTERED AT 08:20:55 ON 15 DEC 2005

L3 STR

FILE 'REGISTRY' ENTERED AT 08:25:53 ON 15 DEC 2005

L4 SCR 1918 AND 1840  
L5 1 SEA SSS SAM L3 AND L4  
D SCAN  
D QUE STAT  
D QUE STAT

FILE 'LREGISTRY' ENTERED AT 08:28:35 ON 15 DEC 2005

L6 STR L3

FILE 'REGISTRY' ENTERED AT 08:31:19 ON 15 DEC 2005

L7 3 SEA SSS SAM L6 AND L4  
D SCAN  
D QUE STAT  
D SCAN L2

FILE 'LREGISTRY' ENTERED AT 08:40:03 ON 15 DEC 2005

L8 STR L3

FILE 'REGISTRY' ENTERED AT 08:44:43 ON 15 DEC 2005

L9 SCR 1918 AND 1840 AND 1993

L10 3 SEA SSS SAM L8 AND L9

D SCAN  
D QUE STAT  
D SCAN L5  
D QUE STAT L5  
D QUE STAT L7

L11 3 SEA SSS SAM L6 AND L9

D SCAN  
D SCAN L2  
D QUE STAT

FILE 'LREGISTRY' ENTERED AT 09:19:13 ON 15 DEC 2005

L12 STR

FILE 'REGISTRY' ENTERED AT 09:22:58 ON 15 DEC 2005

L13 18 SEA SSS SAM L12 AND L9  
D QUE STAT  
L14 675 SEA SSS FUL L12 AND L9  
SAV L14 GAR712/A

FILE 'HCAPLUS' ENTERED AT 09:28:32 ON 15 DEC 2005

L15 136 SEA ABB=ON PLU=ON L14  
L16 QUE ABB=ON PLU=ON EL OR E(W)L OR L(W)E(W)D OR OLED  
OR ELECTROLUMIN? OR ORGANOLUMIN? OR (ELECTRO OR ORGANO  
OR ORG#) (2A) LUMIN? OR LIGHT? (2A) (EMIT? OR EMISSION? OR  
SOURCE?)  
L17 QUE ABB=ON PLU=ON (LUMINES##### OR FLUORES? OR  
PHOSPHORES?)/BI,AB OR LED/IT OR PHOSPHOR# OR LUMIN?  
L18 46 SEA ABB=ON PLU=ON L15 AND L16  
L19 54 SEA ABB=ON PLU=ON L15 AND L17  
L20 60 SEA ABB=ON PLU=ON L18 OR L19

FILE 'LREGISTRY' ENTERED AT 09:32:06 ON 15 DEC 2005

FILE 'REGISTRY' ENTERED AT 09:32:23 ON 15 DEC 2005

L21 303 SEA ABB=ON PLU=ON L14 AND 1-6/IR

FILE 'HCAPLUS' ENTERED AT 09:35:43 ON 15 DEC 2005

L22 63 SEA ABB=ON PLU=ON L21  
L23 45 SEA ABB=ON PLU=ON L22 AND L16  
L24 49 SEA ABB=ON PLU=ON L22 AND L17  
L25 55 SEA ABB=ON PLU=ON L23 OR L24  
L26 5 SEA ABB=ON PLU=ON L20 NOT L25  
D SCAN TI

FILE 'LREGISTRY' ENTERED AT 09:40:28 ON 15 DEC 2005

L27 STR L12  
L28 STR L12

FILE 'REGISTRY' ENTERED AT 09:47:38 ON 15 DEC 2005

FILE 'REGISTRY' ENTERED AT 09:48:08 ON 15 DEC 2005

L29 2 SEA SUB=L14 SSS SAM (L27 OR L28)  
D SCAN  
D QUE STAT  
L30 136 SEA SUB=L14 SSS FUL (L27 OR L28)  
D QUE STAT  
SAV L30 GAR712A/A  
L31 92 SEA ABB=ON PLU=ON L30 AND 1-6/IR  
L32 44 SEA ABB=ON PLU=ON L30 NOT L31

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L33 28 SEA ABB=ON PLU=ON L30  
L34 18 SEA ABB=ON PLU=ON L31  
L35 11 SEA ABB=ON PLU=ON L32  
L36 10 SEA ABB=ON PLU=ON L33 NOT L34  
L37 14 SEA ABB=ON PLU=ON L33 AND L16  
L38 16 SEA ABB=ON PLU=ON L33 AND L17  
L39 17 SEA ABB=ON PLU=ON L37 OR L38



L40 28 SEA ABB=ON PLU=ON L39 OR L33  
 L41 18 SEA ABB=ON PLU=ON L40 AND L34  
 L42 10 SEA ABB=ON PLU=ON L40 NOT L41  
 L43 43 SEA ABB=ON PLU=ON L20 NOT L40

D 1-5 FHITSTR

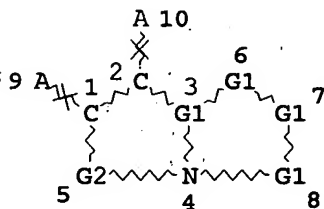
D L41 1-5 FHITSTR

D L42 1-5 FHITSTR

=> => d que stat l41

L9 SCR 1918 AND 1840 AND 1993

L12 STR



VAR G1=C/N

VAR G2=IR/RH/OS/PT/PD

NODE ATTRIBUTES:

NSPEC IS RC AT 9

NSPEC IS RC AT 10

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 10

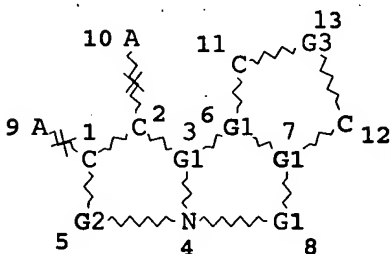
STEREO ATTRIBUTES: NONE

L14 675 SEA FILE=REGISTRY SSS FUL L12 AND L9

L16 QUE ABB=ON PLU=ON EL OR E(W)L OR L(W)E(W)D OR OLED O  
 R ELECTROLUM!N? OR ORGANOLUM!N? OR (ELECTRO OR ORGANO O  
 R ORG#) (2A) LUM!N? OR LIGHT? (2A) (EMIT? OR EMISSION? OR S  
 OURCE?)

L17 QUE ABB=ON PLU=ON (LUMINES##### OR FLUORES? OR PHO  
 SPHORES?)/BI,AB OR LED/IT OR PHOSPHOR# OR LUMIN?

L27 STR



VAR G1=C/N

VAR G2=IR/RH/OS/PT/PD

REP G3=(1-2) C

## NODE ATTRIBUTES:

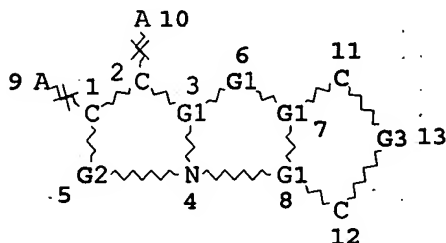
NSPEC IS RC AT 9  
 NSPEC IS RC AT 10  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

## GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 13

## STEREO ATTRIBUTES: NONE

L28 STR



VAR G1=C/N

VAR G2=IR/RH/OS/PT/PD

REP G3=(1-2) C

## NODE ATTRIBUTES:

NSPEC IS RC AT 9  
 NSPEC IS RC AT 10  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

## GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 13

## STEREO ATTRIBUTES: NONE

L30 136 SEA FILE=REGISTRY SUB=L14 SSS FUL (L27 OR L28)  
 L31 92 SEA FILE=REGISTRY ABB=ON PLU=ON L30 AND 1-6/IR  
 L33 28 SEA FILE=HCAPLUS ABB=ON PLU=ON L30  
 L34 18 SEA FILE=HCAPLUS ABB=ON PLU=ON L31  
 L37 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 AND L16  
 L38 16 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 AND L17  
 L39 17 SEA FILE=HCAPLUS ABB=ON PLU=ON L37 OR L38  
 L40 28 SEA FILE=HCAPLUS ABB=ON PLU=ON L39 OR L33  
 L41 18 SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L34

=> => d l41 1-18 ibib abs hitstr hitind

L41 ANSWER 1 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:1093857 HCAPLUS

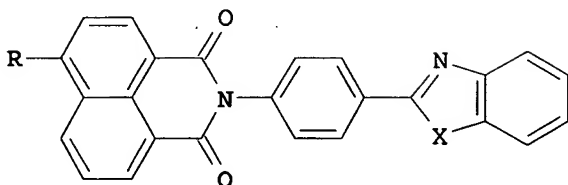
DOCUMENT NUMBER: 143:347178

TITLE: Process for preparation of  
 phosphorescent 1,8-naphthalimide

INVENTOR(S): derivatives  
 Tian, He; Ding, Guohua; Jing, Shuping; Zhu,  
 Weihong  
 PATENT ASSIGNEE(S): East China University of Science and  
 Technology, Peop. Rep. China  
 SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu,  
 12 pp.  
 CODEN: CNXXEV  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Chinese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1560052	A	20050105	CN 2004-10016567	2004 0226
PRIORITY APPLN. INFO.:			CN 2004-10016567	2004 0226

GI



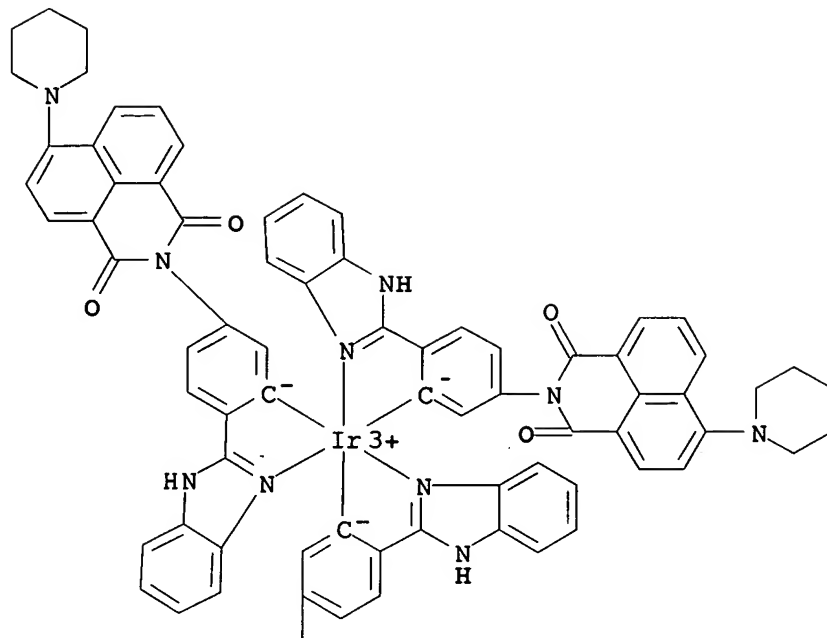
I

AB The invention provides **phosphorescent** or **fluorescent** 1,8-naphthalimide derivs. I [wherein X = S, O, or NH; R = piperidinyl, morpholyl, or dialkylamino] or their metal complexes. The derivs. contain heterocyclic groups such as 1,8-naphthalimide and benzothiazole, which can ensure that carrier injection, carrier combination and exciton generation take place intramolecularly, and to avoid the chrominance defect caused by the change of delocalization degree. The derivs. have maximum wavelength within 511-521 nm (yellow green) or above 630 nm (red), maximum brightness within 4,500-4,800 cd/m<sup>2</sup> under driving voltage of 20 V.

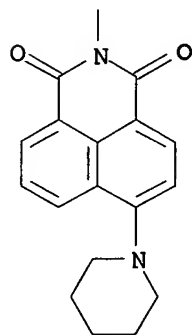
IT 865775-81-1P  
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation);  
 PREP (Preparation)  
 (preparation of **phosphorescent** 1,8-naphthalimide derivs.)

RN 865775-81-1 HCAPLUS  
 CN INDEX NAME NOT YET ASSIGNED

PAGE 1-A



PAGE 2-A



IC ICM C07D401-10  
 ICS C09K011-06  
 CC 28-9 (Heterocyclic Compounds (More Than One Hetero Atom))  
 Section cross-reference(s): 29, 73  
 ST prepn phosphorescent naphthalimide benzothiazole  
 benzoxazole benzimidazole  
 IT **Fluorescence**  
     **Phosphorescence**  
     (preparation of phosphorescent 1,8-naphthalimide derivs.)  
 IT 2963-77-1P 6278-73-5P 20934-81-0P 31837-36-2P 77976-79-5P

87223-12-9P 865775-74-2P  
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (intermediate; preparation of **phosphorescent** 1,8-naphthalimide derivs.)

IT 865775-72-0P 865775-73-1P 865775-75-3P 865775-76-4P  
865775-77-5P 865775-78-6P 865775-79-7P 865775-80-0P  
865775-81-1P  
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation) (preparation of **phosphorescent** 1,8-naphthalimide derivs.)

IT 81-86-7 95-54-5, 1,2-Benzenediamine, reactions 95-55-6, 2-Aminophenol 110-89-4, Piperidine, reactions 110-91-8, Morpholine, reactions 124-40-3, Dimethylamine, reactions 137-07-5, 2-Aminobenzenethiol 150-13-0, 4-Aminobenzoic acid 15635-87-7  
RL: RCT (Reactant); RACT (Reactant or reagent) (preparation of **phosphorescent** 1,8-naphthalimide derivs.)

L41 ANSWER 2 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2005:1055959 HCAPLUS  
DOCUMENT NUMBER: 143:460269  
TITLE: Synthesis and characterization of novel iridium complexes with ligands of 2-phenylimidazo[1,2-a]pyridine derivatives and application to organic light-emitting diode

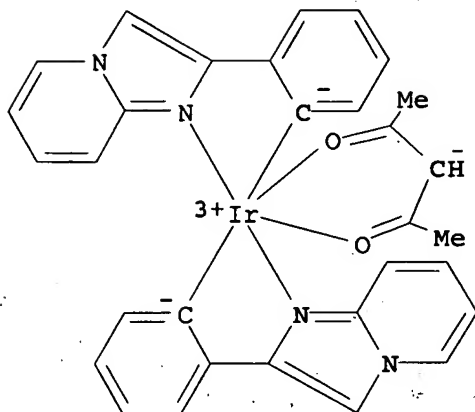
AUTHOR(S): Takizawa, Shin-ya; Nishida, Jun-ichi; Tsuzuki, Toshimitsu; Tokito, Shizuo; Yamashita, Yoshiro  
CORPORATE SOURCE: Department of Electronic Chemistry, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, Nagatsuta, Midori-ku, Yokohama, 226-8502, Japan  
SOURCE: Chemistry Letters (2005), 34(9), 1222-1223  
CODEN: CMLTAG; ISSN: 0366-7022  
PUBLISHER: Chemical Society of Japan  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Novel iridium complexes with ligands of 2-phenylimidazo[1,2-a]pyridines were prepared, and the emission maxima were unusually dependent on the substituents on the Ph ring. An OLED using the derivative was fabricated to show white emission.

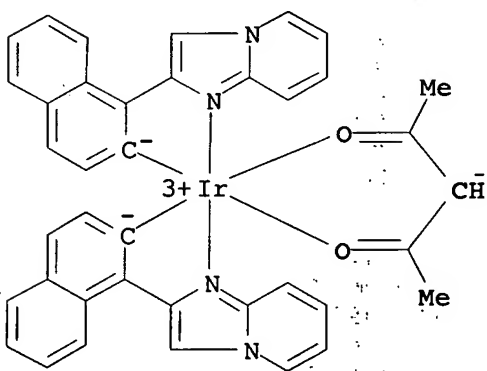
IT 853179-43-8P 869361-23-9P 869361-24-0P  
869361-25-1P  
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses) (synthesis, characterization, photophys., and electrochem. of iridium complexes with ligands of phenylimidazopyridine derivs. and application to organic light-emitting diode)

RN 853179-43-8 HCAPLUS  
CN Iridium, bis[2-(imidazo[1,2-a]pyridin-2-yl-κN1)phenyl-κC](2,4-pentanedionato-κO,κO')- (9CI) (CA INDEX

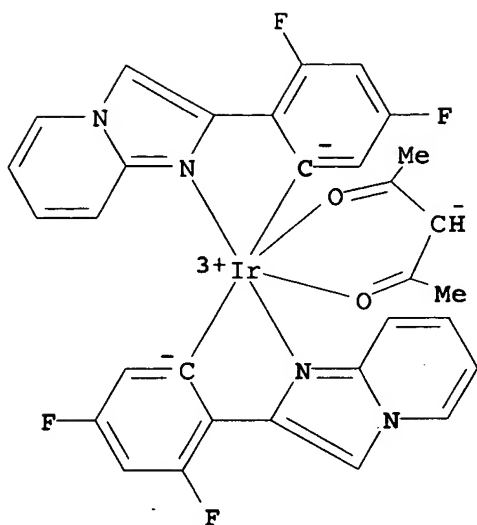
NAME)



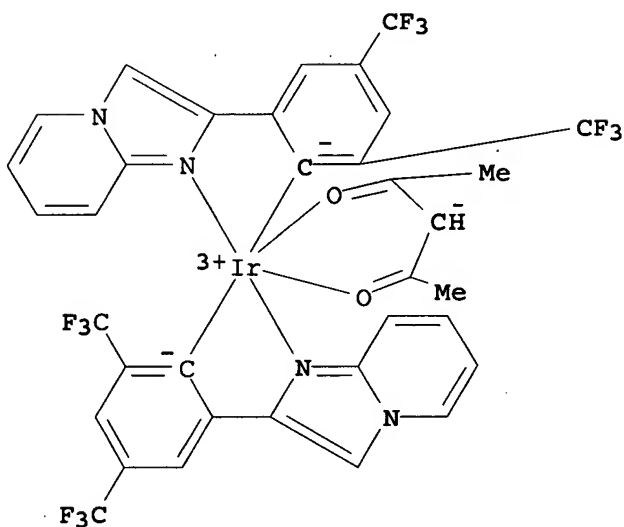
RN 869361-23-9 HCAPLUS  
CN INDEX NAME NOT YET ASSIGNED



RN 869361-24-0 HCAPLUS  
CN INDEX NAME NOT YET ASSIGNED



RN 869361-25-1 HCAPLUS  
 CN INDEX NAME NOT YET ASSIGNED



CC 29-13 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 28, 72, 73  
 ST phenyl imidazo pyridine deriv prepn cyclometalation iridium;  
 cyclometalated phenylimidazo pyridine iridium **light**  
**emitting** diode electrochem redox; emission  
**phosphorescence** cyclometalated phenylimidazo pyridine  
 iridium  
 IT Redox reaction  
 (electrochem.; synthesis, characterization, photophys., and

electrochem. of iridium complexes with ligands of phenylimidazopyridine derivs. and application to organic light-emitting diode)

IT Electroluminescent devices

(organic; synthesis, characterization, photophys., and electrochem. of iridium complexes with ligands of phenylimidazopyridine derivs. and application to organic light-emitting diode)

IT Absorption spectra

Emission spectra

HOMO (molecular orbital)

LUMO (molecular orbital)

Phosphorescence

Reduction potential

(synthesis, characterization, photophys., and electrochem. of iridium complexes with ligands of phenylimidazopyridine derivs. and application to organic light-emitting diode)

IT 853179-43-8P 869361-23-9P 869361-24-0P

869361-25-1P

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)

(synthesis, characterization, photophys., and electrochem. of iridium complexes with ligands of phenylimidazopyridine derivs. and application to organic light-emitting diode)

IT 70-11-1 504-29-0, 2-Aminopyridine 13686-51-6 102429-07-2 131805-94-2

RL: RCT (Reactant); RACT (Reactant or reagent)

(synthesis, characterization, photophys., and electrochem. of iridium complexes with ligands of phenylimidazopyridine derivs. and application to organic light-emitting diode)

IT 4105-21-9P 284665-41-4P 324741-45-9P 769093-92-7P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(synthesis, characterization, photophys., and electrochem. of iridium complexes with ligands of phenylimidazopyridine derivs. and application to organic light-emitting diode)

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 3 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:951050 HCAPLUS

DOCUMENT NUMBER: 143:248516

TITLE: Preparation of organometallic complex for organic electroluminescent device

INVENTOR(S): Lin, Cheng-hung

PATENT ASSIGNEE(S): Au Optronics Corp., Taiwan

SOURCE: U.S., 9 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

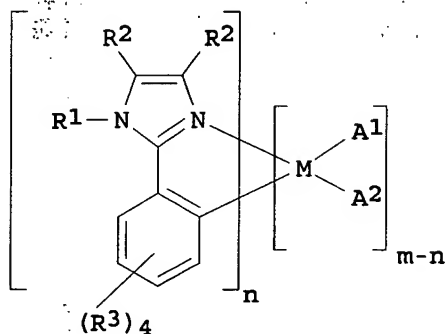


LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6936716	B1	20050830	US 2004-903631	2004 0730
CN 1583772	A	20050223	CN 2004-10047401	2004 0527

PRIORITY APPLN. INFO.: TW 2004-93113822 A  
 2004  
 0517

OTHER SOURCE(S): CASREACT 143:248516; MARPAT 143:248516  
 GI



I

AB Preparation of organometallic complexes I (M = transition metal; A1, A2 = independently a monodentate ligand, or A1 and A2 are covalently joined together to form a bidentate ligand; R1 = H, C1-18 alkyl, C1-18 alkoxy, C3-18 heteroalkyl, C3-20 aryl, C3-20 heteroaryl, C3-20 cycloalkyl; R2 = same or different and is H, C1-18 alkyl, C1-18 alkoxy, C3-18 heteroalkyl, C3-20 aryl, C3-20 heteroaryl, or C3-20 cycloalkyl, or two R2 groups link together with the carbon atoms to which they are attached to form a 4- to 12-member aromatic or heteroarom. ring; R3 = same or different and is H, CN, tricyanovinyl, halogen, CX3, C1-18 alkyl, C1-18 alkoxy, C3-18 heteroalkyl, C3-20 aryl, C3-20 heteroaryl, or C3-20 cycloalkyl, wherein X is halogen; m = charge of M; n = 1-3), useful as electroluminescent device, is described. Thus, reaction of PhCOCl with PhNHC6H4NH2-2 in the presence of Et3N in CH2Cl2 gave 70% 1,2-diphenyl-1H-benzimidazole which on sequential treatment with IrCl3 and picolinic acid gave title compound, iridium(III)bis[1,2-diphenyl-1H-benzimidazole] (picolinate).

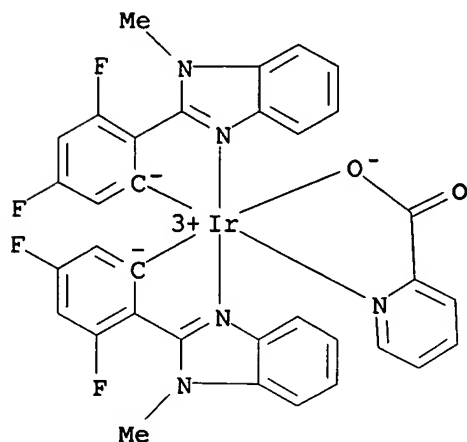
IT 654066-55-4P 863422-87-1P 863422-89-3P

863422-90-6P 863422-92-8P

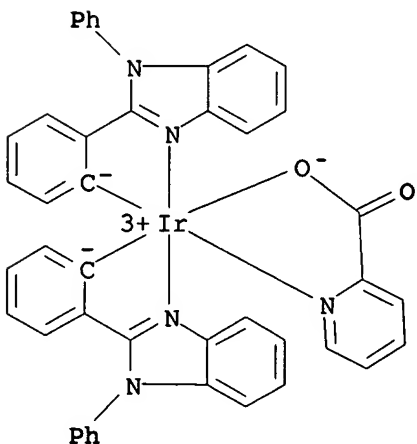
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation of cyclometalated benzimidazole iridium organometallic complexes for organic electroluminescent device)

RN 654066-55-4 HCAPLUS

CN Iridium, bis[3,5-difluoro-2-(1-methyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C] (2-pyridinecarboxylato- $\kappa$ N1, $\kappa$ O2)- (9CI) (CA INDEX NAME)

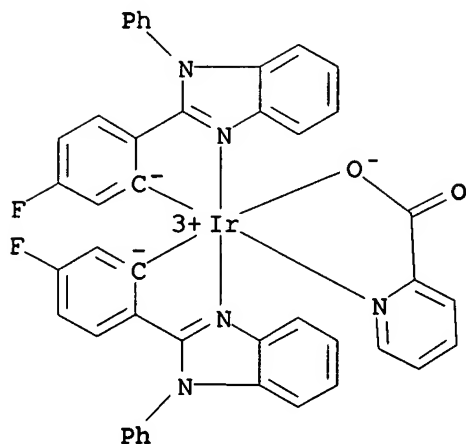
RN 863422-87-1 HCAPLUS

CN Iridium, bis[2-(1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C] (2-pyridinecarboxylato- $\kappa$ N1, $\kappa$ O2)- (9CI) (CA INDEX NAME)

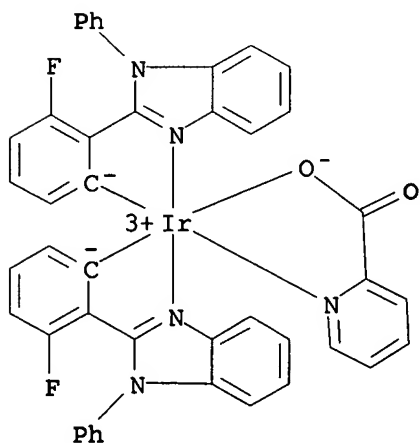
RN 863422-89-3 HCAPLUS

CN Iridium, bis[5-fluoro-2-(1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C] (2-pyridinecarboxylato-

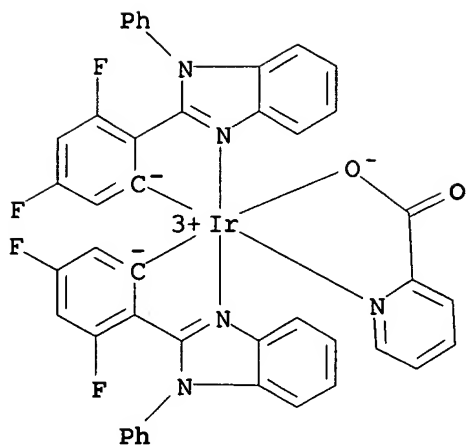
$\kappa N1, \kappa O2$ ) - (9CI) (CA INDEX NAME)



RN 863422-90-6 HCAPLUS  
 CN Iridium, bis[3-fluoro-2-(1-phenyl-1H-benzimidazol-2-yl-  
 $\kappa N3$ )phenyl- $\kappa C$ ] (2-pyridinecarboxylato-  
 $\kappa N1, \kappa O2$ ) - (9CI) (CA INDEX NAME)



RN 863422-92-8 HCAPLUS  
 CN Iridium, bis[3,5-difluoro-2-(1-phenyl-1H-benzimidazol-2-yl-  
 $\kappa N3$ )phenyl- $\kappa C$ ] (2-pyridinecarboxylato-  
 $\kappa N1, \kappa O2$ ) - (9CI) (CA INDEX NAME)



IT 863422-94-0P 863422-96-2P 863423-00-1P

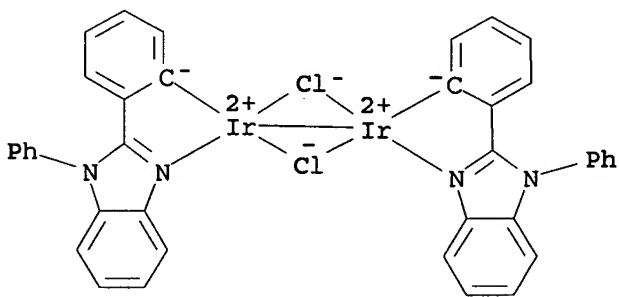
863423-03-4P 863423-07-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of cyclometalated benzimidazole iridium organometallic complexes for organic electroluminescent device)

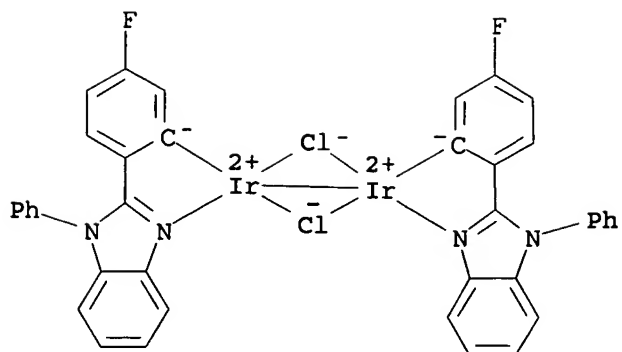
RN 863422-94-0 HCAPLUS

CN Iridium, di- $\mu$ -chlorobis[2-(1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C]di-, (Ir-Ir) (9CI) (CA INDEX NAME)

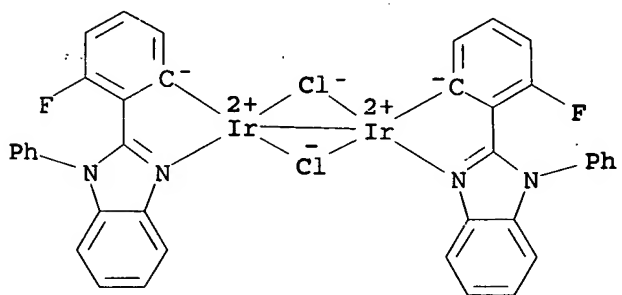


RN 863422-96-2 HCAPLUS

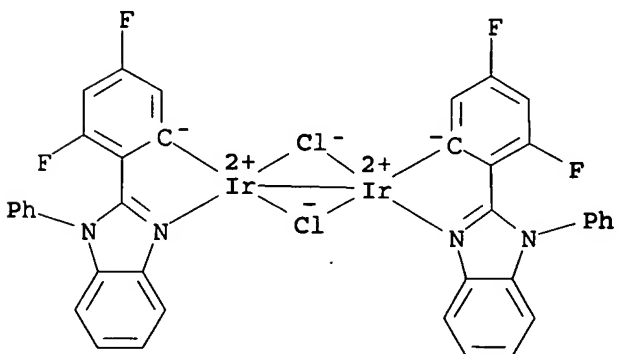
CN Iridium, di- $\mu$ -chlorobis[5-fluoro-2-(1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C]di-, (Ir-Ir) (9CI) (CA INDEX NAME)



RN 863423-00-1 HCAPLUS  
 CN Iridium, di- $\mu$ -chlorobis[3-fluoro-2-(1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C]di-, (Ir-Ir) (9CI) (CA INDEX NAME)

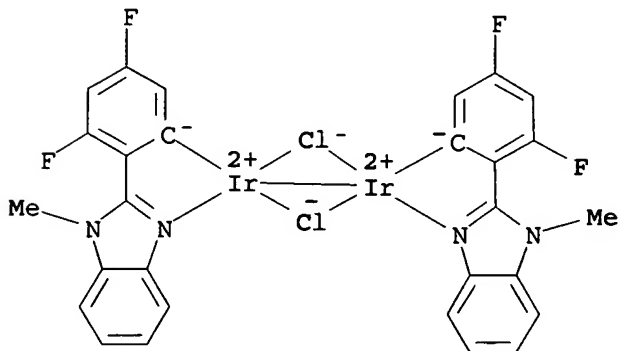


RN 863423-03-4 HCAPLUS  
 CN Iridium, di- $\mu$ -chlorobis[3,5-difluoro-2-(1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C]di-, (Ir-Ir) (9CI) (CA INDEX NAME)



RN 863423-07-8 HCAPLUS

CN Iridium, di- $\mu$ -chlorobis[3,5-difluoro-2-(1-methyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C]di-, (Ir-Ir) (9CI)  
(CA INDEX NAME)



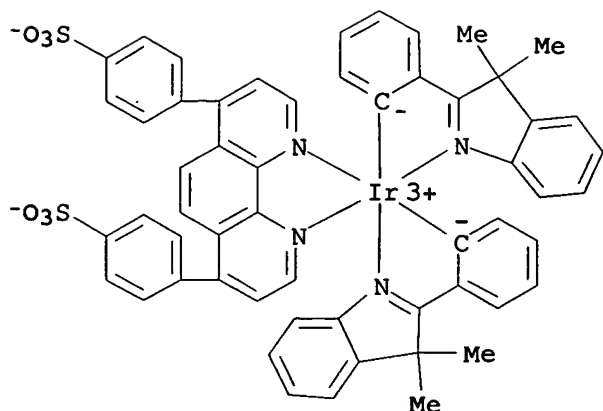
IC ICM C07F015-00  
ICS H05B033-14; C09K011-06  
INCL 546002000; 548101000; 548108000; 428432000; 428690000; 428917000  
CC 29-13 (Organometallic and Organometalloidal Compounds)  
Section cross-reference(s): 73  
ST cyclometalated benzimidazole iridium organometallic complex prep  
electroluminescent device  
IT Metalation  
(cyclometalation; preparation of cyclometalated benzimidazole  
iridium organometallic complexes for organic  
electroluminescent device)  
IT Electroluminescent devices  
Fluorescence  
(preparation of cyclometalated benzimidazole iridium organometallic  
complexes for organic electroluminescent device)  
IT 654066-55-4P 863422-87-1P 863422-89-3P  
863422-90-6P 863422-92-8P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(preparation of cyclometalated benzimidazole iridium organometallic  
complexes for organic electroluminescent device)  
IT 98-88-4, Benzoyl chloride 98-98-6, Picolinic acid 393-52-2,  
2-Fluorobenzoyl chloride 403-43-0, 4-Fluorobenzoyl chloride  
534-85-0 4760-34-3 13569-57-8, Iridium trichloride trihydrate  
72482-64-5, 2,4-Difluorobenzoyl chloride  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of cyclometalated benzimidazole iridium organometallic  
complexes for organic electroluminescent device)  
IT 2622-67-5P 2622-70-0P 852673-40-6P 863422-94-0P  
863422-96-2P 863422-98-4P 863423-00-1P  
863423-03-4P 863423-05-6P 863423-07-8P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)  
(preparation of cyclometalated benzimidazole iridium organometallic  
complexes for organic electroluminescent device)  
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE

FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L41 ANSWER 4 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2005:735297 HCAPLUS  
 DOCUMENT NUMBER: 143:194110  
 TITLE: Organometallic complexes as singlet oxygen sensitizers  
 INVENTOR(S): Thompson, Mark E.; Djurovich, Peter I.; Murphy, Drew; Selke, Matthias  
 PATENT ASSIGNEE(S): USA  
 SOURCE: U.S. Pat. Appl. Publ., 31 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005176624	A1	20050811	US 2004-913931	2004 0806
PRIORITY APPLN. INFO.:			US 2003-493144P	2003 0807

OTHER SOURCE(S): CASREACT 143:194110; MARPAT 143:194110  
 AB A series of organometallic complexes and the singlet oxygen sensitization properties of these complexes are provided. Complexes with acetylacetonate ligands give singlet oxygen quantum yields near unity, whether exciting the ligand-based state or the lowest energy excited state (MLCT+3LC). The singlet oxygen quenching rates for these  $\beta$ -diketonate complexes are small, roughly three orders of magnitude slower than the corresponding phosphorescence quenching rate. Similar complexes were prepared with glycine or pyridine tethered to the Ir(III) center (i.e. (bsn)2Ir(gly) and (bt)2Ir(py)Cl, where gly = glycine, and py = pyridine). The glycine and pyridine derivs. give high singlet oxygen yields.  
 IT 861884-20-0  
 RL: DEV (Device component use); USES (Uses)  
 (preparation of cyclometalated organometallic complexes as singlet oxygen sensitizers)  
 RN 861884-20-0 HCAPLUS  
 CN Iridate(1-), bis[2-(3,3-dimethyl-3H-indol-2-yl- $\kappa$ N)phenyl- $\kappa$ C][[4,4'-(1,10-phenanthroline-4,7-diyl- $\kappa$ N1, $\kappa$ N10)bis[benzenesulfonato]](2-)]-, sodium (9CI)  
 (CA INDEX NAME)



IC ICM C07F015-00

ICS A61K038-16; A61K031-555

INCL 514006000; 530400000; 546002000; 548101000; 514184000; 514185000; 604020000

CC 29-13 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 73, 74, 76

IT Electroluminescent devices

Electrophotographic sensitizers

Luminescent substances

Phosphorescence quenching

(preparation of cyclometalated organometallic complexes as singlet oxygen sensitizers)

IT 7439-88-5D, Iridium, cyclometalated complexes 7439-89-6D, Iron, cyclometalated complexes 7439-92-1D, Lead, cyclometalated complexes 7439-96-5D, Manganese, cyclometalated complexes 7439-98-7D, Molybdenum, cyclometalated complexes 7440-02-0D, Nickel, cyclometalated complexes 7440-03-1D, Niobium, cyclometalated complexes 7440-04-2D, Osmium, cyclometalated complexes 7440-05-3D, Palladium, cyclometalated complexes 7440-06-4D, Platinum, cyclometalated complexes 7440-15-5D, Rhenium, cyclometalated complexes 7440-16-6D, Rhodium, cyclometalated complexes 7440-18-8D, Ruthenium, cyclometalated complexes 7440-22-4D, Silver, cyclometalated complexes 7440-25-7D, Tantalum, cyclometalated complexes 7440-26-8D, Technetium, cyclometalated complexes 7440-28-0D, Thallium, cyclometalated complexes 7440-31-5D, Tin, cyclometalated complexes 7440-33-7D, Tungsten, cyclometalated complexes 7440-36-0D, Antimony, cyclometalated complexes 7440-47-3D, Chromium, cyclometalated complexes 7440-48-4D, Cobalt, cyclometalated complexes 7440-57-5D, Gold, cyclometalated complexes 7440-58-6D, Hafnium, cyclometalated complexes 7440-62-2D, Vanadium, cyclometalated complexes 7440-67-7D, Zirconium, cyclometalated complexes 7440-69-9D, Bismuth, cyclometalated complexes 7440-74-6D, Indium, cyclometalated



complexes 13494-80-9D, Tellurium, cyclometalated complexes  
 52594-52-2 52594-55-5 63133-64-2 151111-79-4 337526-85-9  
 337526-88-2 337526-93-9 337526-95-1 343978-94-9  
 345659-08-7 376367-93-0 400608-68-6 400654-02-6  
 441072-27-1 441072-43-1 504409-35-2 693794-98-8  
 800395-01-1 861884-18-6 861884-19-7 861884-20-0  
 861884-21-1 861884-22-2 861884-23-3 861884-24-4  
 861884-25-5 861884-26-6 861884-27-7 861884-28-8

RL: DEV (Device component use); USES (Uses)

(preparation of cyclometalated organometallic complexes as singlet oxygen sensitizers)

L41 ANSWER 5 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:497309 HCAPLUS

DOCUMENT NUMBER: 143:34920

TITLE: Organic element for electroluminescent devices

INVENTOR(S): Deaton, Joseph C.; Helber, Margaret J.; Giesen, David J.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 23 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005123798	A1	20050609	US 2003-729738	2003 1205
WO 2005056715	A1	20050623	WO 2004-US39866	2004 1129

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2003-729738 A

2003  
1205

OTHER SOURCE(S): MARPAT 143:34920

AB Disclosed is an electroluminescent device comprising a light-emitting layer containing a light emitting phosphorescent material that contains

an organometallic complex comprising Ir and an indole compound with an unsubstituted Ph ring or comprising Ir, Rh, Os, Ru, Pt, or Pd and an isoindole compound. The invention further comprises compns. of certain such complexes as well as a display or area lighting devices and a process for emitting light. The organometallic materials function as useful phosphorescent light emitting materials in electroluminescent devices.

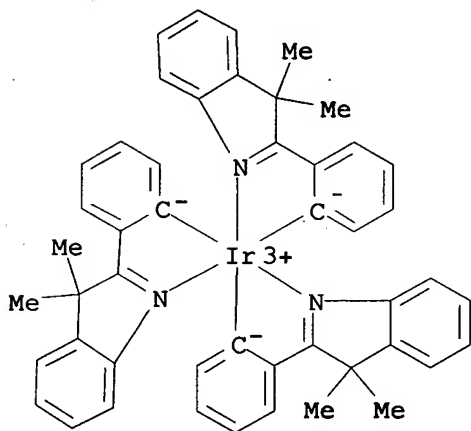
IT 852991-98-1P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(organic element for electroluminescent devices containing organometallic compound having indole or isoindole derivative as ligand as phosphorescent material)

RN 852991-98-1 HCAPLUS

CN Iridium, tris[2-(3,3-dimethyl-3H-indol-2-yl-κN)phenyl-κC]- (9CI) (CA INDEX NAME)



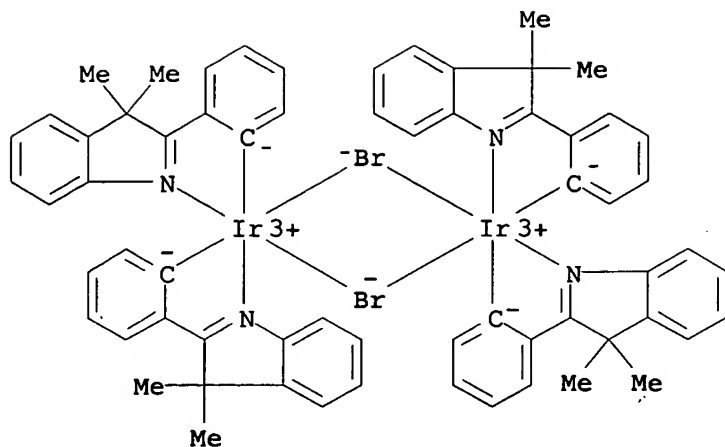
IT 852991-97-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(organic element for electroluminescent devices containing organometallic compound having indole or isoindole derivative as ligand as phosphorescent material)

RN 852991-97-0 HCAPLUS

CN Iridium, di-μ-bromotetrakis[2-(3,3-dimethyl-3H-indol-2-yl-κN)phenyl-κC]di- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06

INCL 428690000; 428917000; 313504000; 313506000; 313112000; 257098000;  
548402000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties).

ST **electroluminescent device iridium indole isoindole**

IT **Electroluminescent devices**  
(organic element for **electroluminescent** devices containing  
organometallic compound having indole or isoindole derivative as  
ligand as **phosphorescent** material)

IT **852991-98-1P**  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(organic element for **electroluminescent** devices containing  
organometallic compound having indole or isoindole derivative as  
ligand as **phosphorescent** material)

IT 100-63-0, Phenylhydrazine 611-70-1, Isobutyrophenone  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic element for **electroluminescent** devices containing  
organometallic compound having indole or isoindole derivative as  
ligand as **phosphorescent** material)

IT 6636-32-4P **852991-97-0P**  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)  
(organic element for **electroluminescent** devices containing  
organometallic compound having indole or isoindole derivative as  
ligand as **phosphorescent** material)

L41 ANSWER 6 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:497306 HCAPLUS

DOCUMENT NUMBER: 143:50495

TITLE: Organic element for **electroluminescent**  
devices

INVENTOR(S): Lussier, Barbara B.; Deaton, Joseph C.;  
Giesen, David J.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 25 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005123795	A1	20050609	US 2003-729712	2003 1205
WO 2005056719	A1	20050623	WO 2004-US39873	2004 1129

*current application*

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2003-729712 A  
 2003  
 1205

OTHER SOURCE(S): MARPAT 143:50495

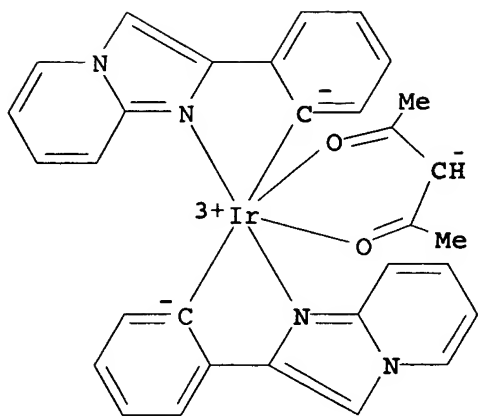
AB Disclosed is an electroluminescent device comprising a light-emitting layer including a light emitting material that contains an organometallic complex comprising (1) a metal Ir, Rh, Os, Pt, or Pd and (2) a diazole group ligand, wherein the ligand has a fused aromatic ring group including a N of the diazole as a bridgehead N. The device provides useful light emission.

IT 853179-43-8P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (organic element for electroluminescent devices containing metal complex with diazole derivative as ligand)

RN 853179-43-8 HCAPLUS

CN Iridium, bis[2-(imidazo[1,2-a]pyridin-2-yl-κN1)phenyl-κC](2,4-pentanedionato-κO,κO')- (9CI) (CA INDEX NAME)

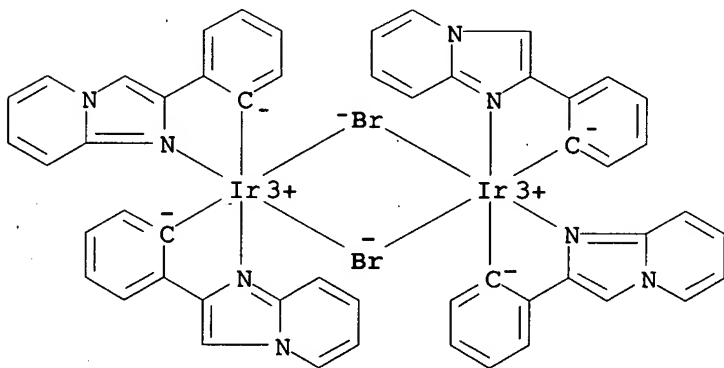


IT 853179-42-7P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(organic element for electroluminescent devices containing metal complex with diazole derivative as ligand)

RN 853179-42-7 HCAPLUS

CN Iridium, di- $\mu$ -bromotetrakis[2-(imidazo[1,2-a]pyridin-2-yl- $\kappa$ N1)phenyl- $\kappa$ C]di- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

INCL 428690000; 428917000; 313504000; 313506000; 313112000; 257098000; 548103000; 548108000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST electroluminescent device diazole deriv ligand

IT Electroluminescent devices

(organic element for electroluminescent devices containing metal complex with diazole derivative as ligand)

IT 853179-43-8P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(organic element for electroluminescent devices containing metal complex with diazole derivative as ligand)  
IT 504-29-0, 2-Aminopyridine 13141-42-9, (2-Phenylethynyl)pyridine 27600-87-9, Bromoacetophenone  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic element for electroluminescent devices containing metal complex with diazole derivative as ligand)  
IT 4105-21-9P, 2-Phenylimidazo[1,2-a]pyridine 56983-95-0P, 2-Phenylpyrazolo[1,5-a]pyridine 853179-42-7P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(organic element for electroluminescent devices containing metal complex with diazole derivative as ligand)

L41 ANSWER 7 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:497303 HCAPLUS

DOCUMENT NUMBER: 143:50493

TITLE: Organic element for electroluminescent devices

INVENTOR(S): Deaton, Joseph C.; Owczarczyk, Zbyslaw R.; Giesen, David J.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 24 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005123792	A1	20050609	US 2003-729402	2003 1205
WO 2005056716	A1	20050623	WO 2004-US39868	2004 1129

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2003-729402 A

2003  
1205

OTHER SOURCE(S): MARPAT 143:50493

AB Disclosed is an electroluminescent device comprising a

light-emitting layer containing a phosphorescent light emitting material that contains an organometallic complex comprising a metal Ir, Rh, Os, Pt, or Pd and a pyrazole compound fused with at least one aromatic ring. The device provides useful light emissions.

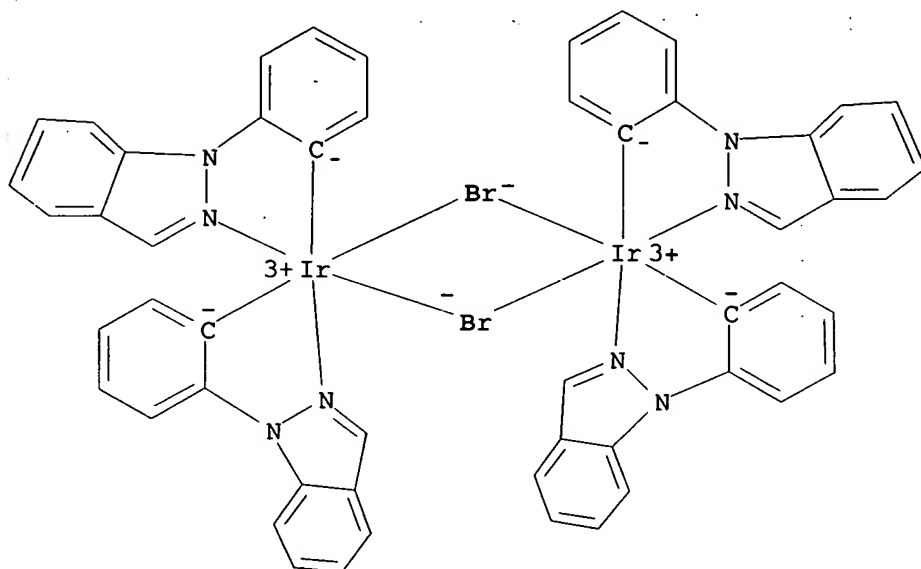
IT 853179-60-9P 853179-62-1P 853179-63-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(organic element for electroluminescent devices containing metal complex with pyrazole derivative as ligand)

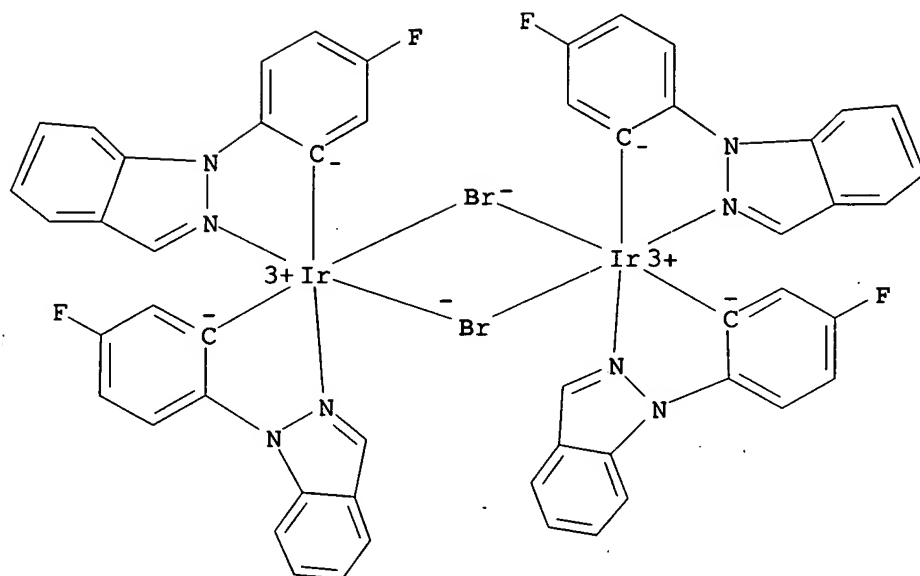
RN 853179-60-9 HCAPLUS

CN Iridium, di- $\mu$ -bromotetrakis[2-(1H-indazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]di- (9CI) (CA INDEX NAME)

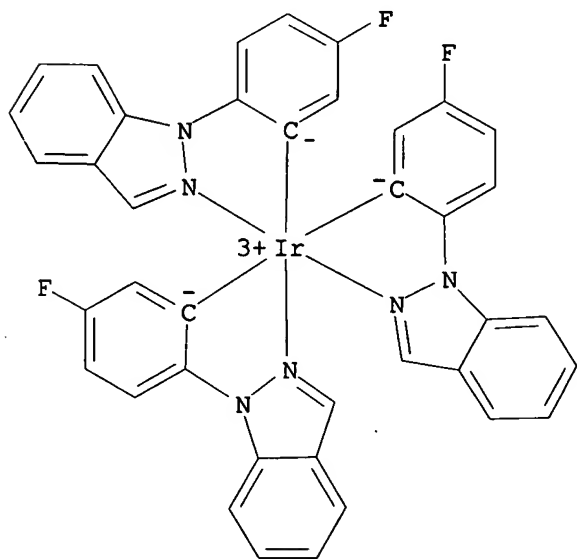


RN 853179-62-1 HCAPLUS

CN Iridium, di- $\mu$ -bromotetrakis[5-fluoro-2-(1H-indazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]di- (9CI) (CA INDEX NAME)



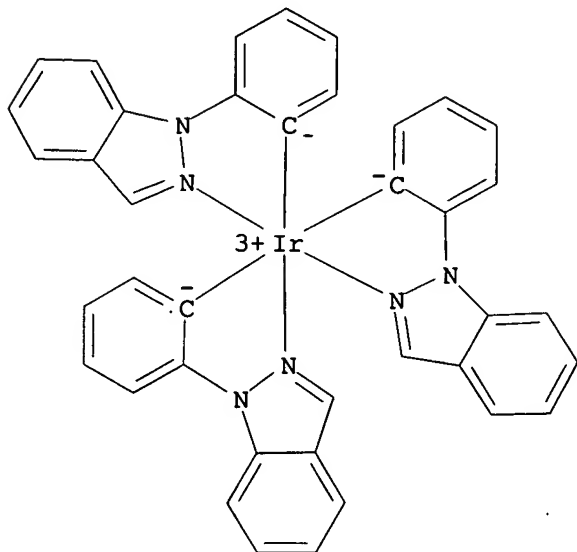
RN 853179-63-2 HCAPLUS  
 CN Iridium, tris[5-fluoro-2-(1H-indazol-1-yl-κN2)phenyl-κC]- (9CI) (CA INDEX NAME)



IT 853179-61-0P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (organic element for electroluminescent devices containing  
 metal complex with pyrazole derivative as ligand)  
 RN 853179-61-0 HCAPLUS



CN Iridium, tris[2-(1H-indazol-1-yl-κN2)phenyl-κC]- (9CI)  
(CA INDEX NAME)

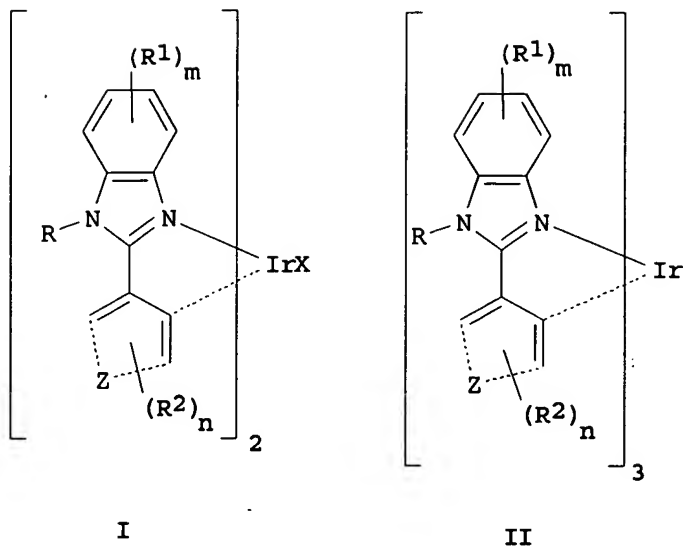


IC ICM H05B033-14  
ICS C09K011-06  
INCL 428690000; 428917000; 313504000; 313506000; 313112000; 257098000;  
548103000; 548108000  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)  
ST **electroluminescent device pyrazole complex**  
IT **Electroluminescent devices**  
(organic element for **electroluminescent** devices containing  
metal complex with pyrazole derivative as ligand)  
IT 271-44-3, Indazole 591-50-4, Iodobenzene 81329-42-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic element for **electroluminescent** devices containing  
metal complex with pyrazole derivative as ligand)  
IT 7788-69-4P, 1-Phenylindazole 853179-60-9P  
853179-62-1P 853179-63-2P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)  
(organic element for **electroluminescent** devices containing  
metal complex with pyrazole derivative as ligand)  
IT 853179-61-0P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(organic element for **electroluminescent** devices containing  
metal complex with pyrazole derivative as ligand)

L41 ANSWER 8 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2005:471776 HCAPLUS  
DOCUMENT NUMBER: 143:26730  
TITLE: Iridium complexes as **light**  
**emitting** materials and organic

INVENTOR(S): light emitting diode device  
Cheng, Chien-Hong; Chen, Ruey-Min; Guo,  
Hong-Ru; Chung, Jun-Wen  
PATENT ASSIGNEE(S): Taiwan  
SOURCE: U.S. Pat. Appl. Publ., 34 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2005116626	A1	20050602	US 2004-992594	2004 1117
JP 2005163036	A2	20050623	JP 2004-332143	2004 1116
PRIORITY APPLN. INFO.:			TW 2003-92132297	A 2003 1118
OTHER SOURCE(S): GI	MARPAT 143:26730			



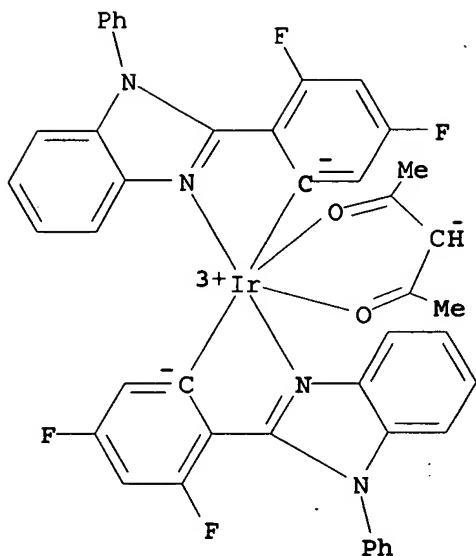
AB **Phosphorescent iridium complexes I and II** (X = monoanionic bidentate ligand; Z = atomic group wherein Z together with buta-1,3-diene to which Z is attached form an aryl group or heteroaryl group; R, R1, R2 = independently chosen from H, or a substituent; m = 0-4; n = 0 to maximum number of possible substituents on Z), are disclosed. **Light emitting devices** using the phosphorescent iridium complexes are also disclosed. Thus, methylation of 2-phenyl-1H-benzimidazole with MeI at room temperature in 6h gave 1-methyl-2-phenyl-1H-benzimidazole which on cyclometalation with iridium trichloride gave title compound. The **light emitting** properties of the compds. prepared are described.

IT 852673-34-8P 852875-76-4P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(crystal structure; preparation of metalacyclic iridium complexes as **light emitting** materials and organic **light emitting** diode device)

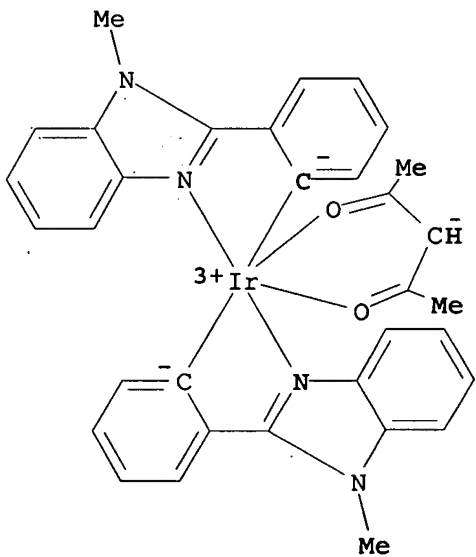
RN 852673-34-8 HCAPLUS

CN Iridium, bis[3,5-difluoro-2-(1-phenyl-1H-benzimidazol-2-yl-κN3)phenyl-κC](2,4-pentanedionato-κO,κO')-, (OC-6-33) - (9CI) (CA INDEX NAME)



RN 852875-76-4 HCAPLUS

CN Iridium, bis[2-(1-methyl-1H-benzimidazol-2-yl-κN3)phenyl-κC] (2,4-pentanedionato-κO,κO')-, (OC-6-33)-(9CI) (CA INDEX NAME)



IT 852673-28-0P 852673-29-1P 852673-30-4P

852673-31-5P 852673-32-6P 852673-33-7P

852673-35-9P 852673-36-0P 852673-37-1P

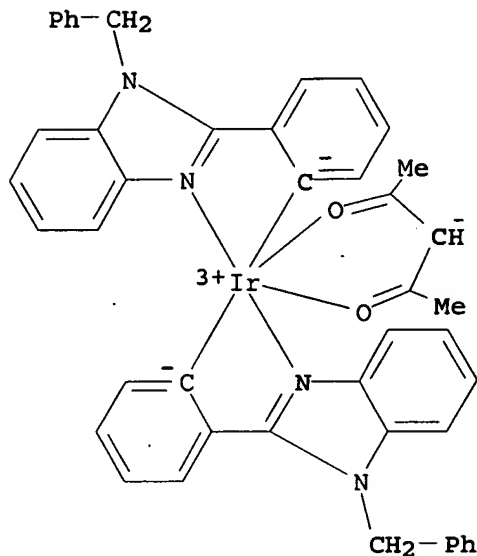
852875-77-5P 852875-78-6P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic

preparation); PREP (Preparation); USES (Uses)  
 (preparation of metalacyclic iridium complexes as light  
 emitting materials and organic light  
 emitting diode device)

RN 852673-28-0 HCAPLUS

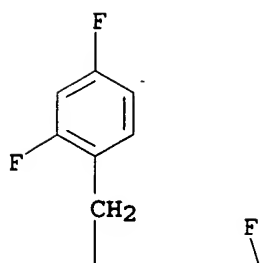
CN Iridium, (2,4-pentanedionato- $\kappa$ O, $\kappa$ O')bis[2-[1-(phenylmethyl)-1H-benzimidazol-2-yl- $\kappa$ N3]phenyl- $\kappa$ C]-, (OC-6-33)- (9CI) (CA INDEX NAME)



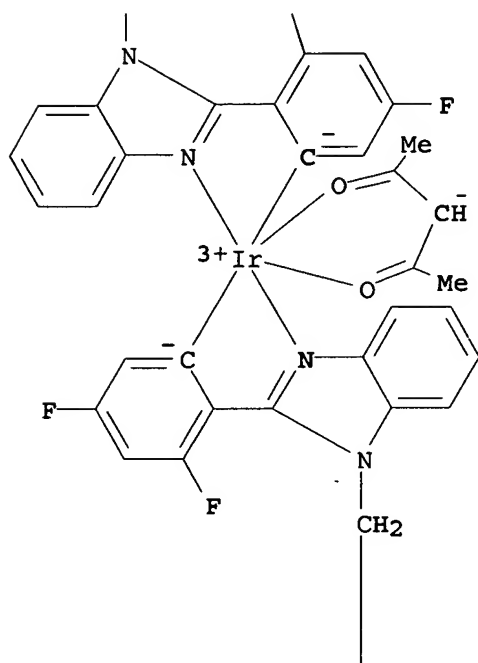
RN 852673-29-1 HCAPLUS

CN Iridium, bis[2-[1-[(2,4-difluorophenyl)methyl]-1H-benzimidazol-2-yl- $\kappa$ N3]-3,5-difluorophenyl- $\kappa$ C] (2,4-pentanedionato- $\kappa$ O, $\kappa$ O')-, (OC-6-33)- (9CI) (CA INDEX NAME)

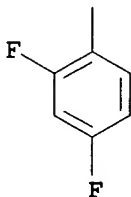
PAGE 1-A



PAGE 2-A

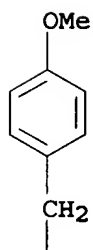


PAGE 3-A



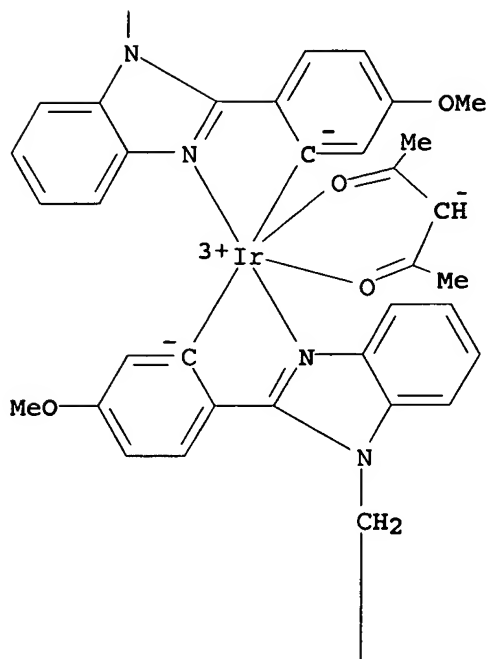
RN 852673-30-4 HCAPLUS  
 CN Iridium, bis[5-methoxy-2-[1-[(4-methoxyphenyl)methyl]-1H-benzimidazol-2-yl-κN3]phenyl-κC](2,4-pentanedionato-κO,κO')-, (OC-6-33)-(9CI) (CA INDEX NAME)

PAGE 1-A

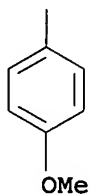




PAGE 2-A

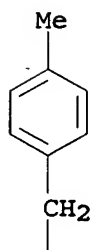


PAGE 3-A

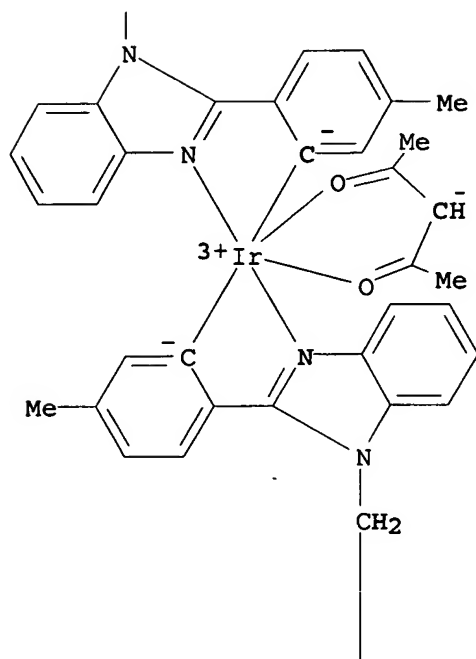


RN 852673-31-5 HCAPLUS  
 CN Iridium, bis[5-methyl-2-[1-[(4-methylphenyl)methyl]-1H-benzimidazol-2-yl-κN3]phenyl-κC](2,4-pentanedionato-κO,κO')-, (OC-6-33)-(9CI) (CA INDEX NAME)

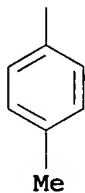
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PAGE 2-A

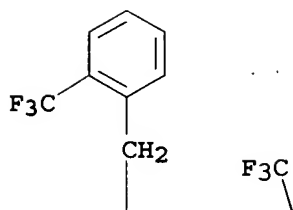


PAGE 3-A

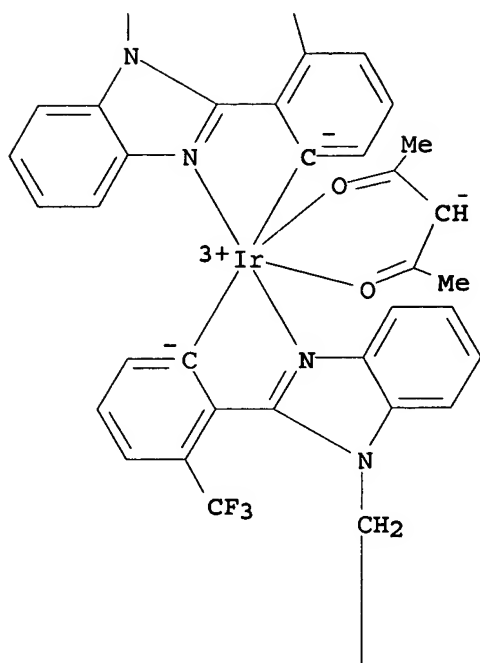


RN 852673-32-6 HCAPLUS  
 CN Iridium, (2,4-pentanedionato-κO,κO')bis[3-(trifluoromethyl)-2-[1-[[2-(trifluoromethyl)phenyl]methyl]-1H-benzimidazol-2-yl-κN3]phenyl-κC]-, (OC-6-33)- (9CI)  
 (CA INDEX NAME)

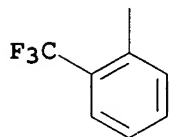
PAGE 1-A



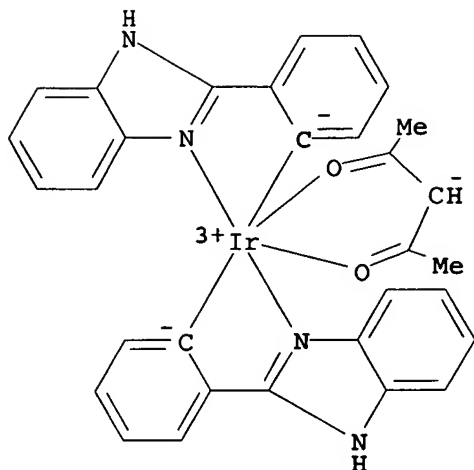
PAGE 2-A



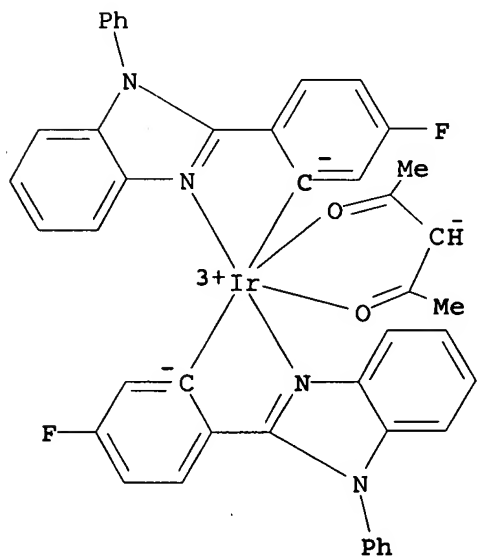
PAGE 3-A



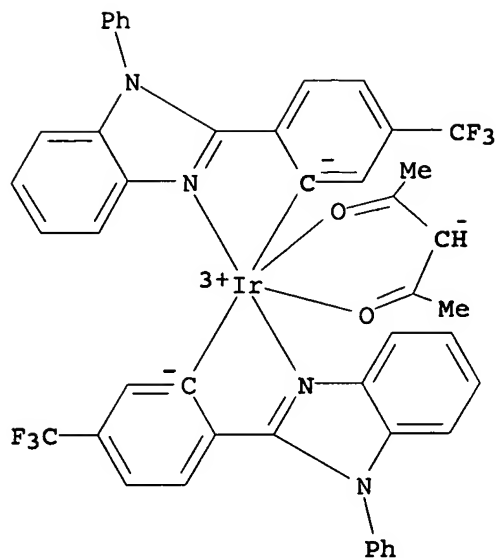
RN 852673-33-7 HCAPLUS  
 CN Iridium, bis[2-(1H-benzimidazol-2-yl-κN3)phenyl-κC](2,4-pentanedionato-κO,κO')-, (OC-6-33)-(9CI) (CA INDEX NAME)



RN 852673-35-9 HCAPLUS  
 CN Iridium, bis[5-fluoro-2-(1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C](2,4-pentanedionato- $\kappa$ O, $\kappa$ O')-, (OC-6-33)- (9CI) (CA INDEX NAME)

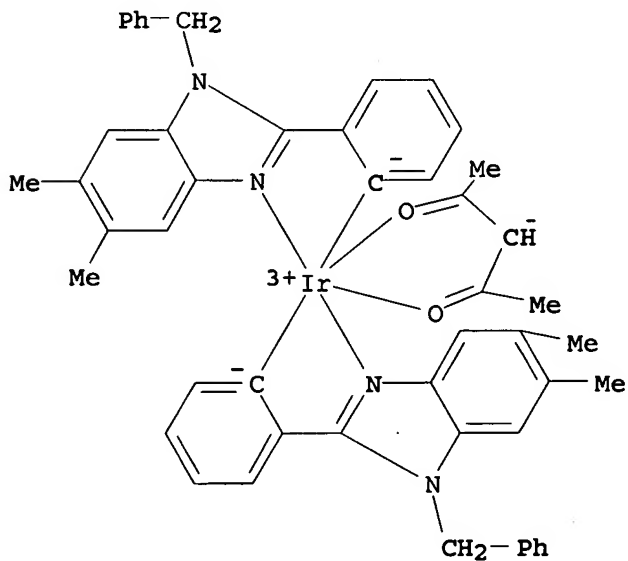


RN 852673-36-0 HCAPLUS  
 CN Iridium, (2,4-pentanedionato- $\kappa$ O, $\kappa$ O')bis[2-(1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)-5-(trifluoromethyl)phenyl- $\kappa$ C]-, (OC-6-33)- (9CI) (CA INDEX NAME)



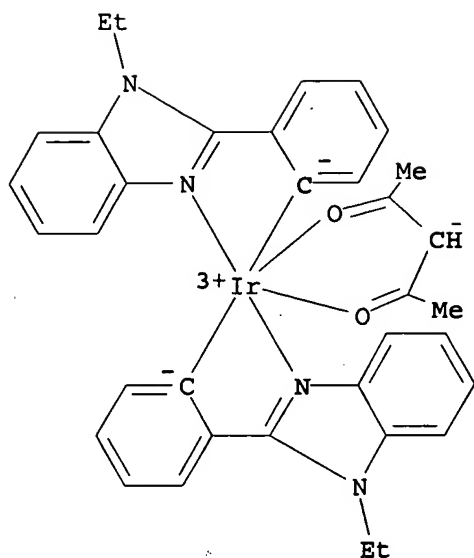
RN 852673-37-1 HCAPLUS

CN Iridium, bis[2-[5,6-dimethyl-1-(phenylmethyl)-1H-benzimidazol-2-yl-κN3]phenyl-κC](2,4-pentanedionato-κO,κO')-, (OC-6-33)-(9CI) (CA INDEX NAME)

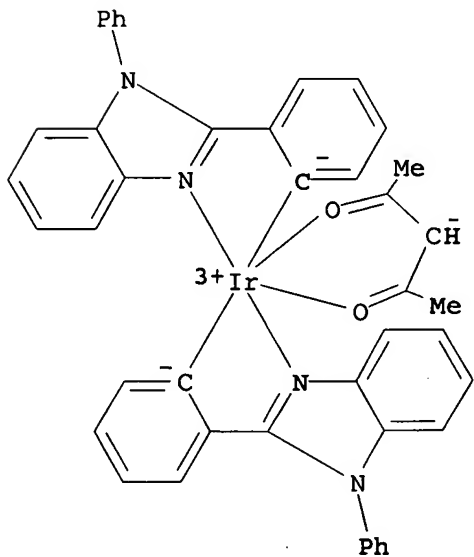


RN 852875-77-5 HCAPLUS

CN Iridium, bis[2-(1-ethyl-1H-benzimidazol-2-yl-κN3)phenyl-κC](2,4-pentanedionato-κO,κO')-, (OC-6-33)-(9CI) (CA INDEX NAME)



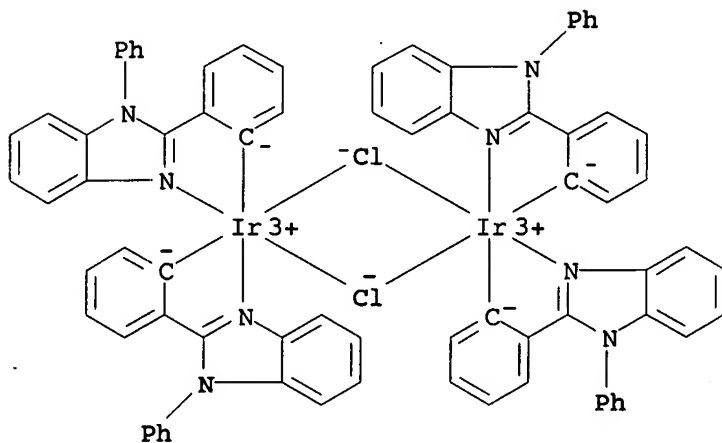
RN 852875-78-6 HCAPLUS  
 CN Iridium, (2,4-pentanedionato- $\kappa$ O, $\kappa$ O')bis[2-(1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C]-, (OC-6-33)- (9CI)  
 (CA INDEX NAME)



IT 807610-00-0P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (preparation of metalacyclic iridium complexes as light  
 emitting materials and organic light)



emitting diode device)  
 RN 807610-00-0 HCAPLUS  
 CN Iridium, di- $\mu$ -chlorotetrakis[2-(1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C]di- (9CI) (CA INDEX NAME)



IC ICM C07F015-00  
 ICS H01J001-62; H01J063-04  
 INCL 313504000; 548101000  
 CC 29-13 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 73  
 ST iridium complex prepn light emitting org diode  
 device phosphorescent; metalacyclic iridium bidentate  
 complex prepn phosphorescent  
 IT Electroluminescent devices  
 Hole (electron)  
 Phosphorescent substances  
 (preparation of metalacyclic iridium complexes as light  
 emitting materials and organic light  
 emitting diode device)  
 IT 852673-34-8P 852875-76-4P  
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic  
 preparation); PREP (Preparation); USES (Uses)  
 (crystal structure; preparation of metalacyclic iridium complexes as  
 light emitting materials and organic  
 light emitting diode device)  
 IT 852673-28-0P 852673-29-1P 852673-30-4P  
 852673-31-5P 852673-32-6P 852673-33-7P  
 852673-35-9P 852673-36-0P 852673-37-1P  
 852875-77-5P 852875-78-6P  
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic  
 preparation); PREP (Preparation); USES (Uses)  
 (preparation of metalacyclic iridium complexes as light  
 emitting materials and organic light  
 emitting diode device)  
 IT 147-14-8 4733-39-5 19287-68-4 58328-31-7 107984-01-0  
 123847-85-8 139092-78-7 146162-54-1 148044-07-9  
 185690-39-5 192198-85-9

RL: PRP (Properties)

(preparation of metalacyclic iridium complexes as light emitting materials and organic light emitting diode device)

IT 95-54-5, 1,2-Phenylenediamine, reactions 100-52-7, Benzaldehyde, reactions 104-87-0, 4-Methylbenzaldehyde 123-11-5, 4-Methoxybenzaldehyde, reactions 123-54-6, Acetylacetone, reactions 447-61-0, 2-(Trifluoromethyl)benzaldehyde 455-19-6, 4-(Trifluoromethyl)benzaldehyde 459-57-4, 4-Fluorobenzaldehyde 534-85-0, N-Phenyl-1,2-phenylenediamine 716-79-0 1550-35-2, 2,4-Difluorobenzaldehyde 3171-45-7, 4,5-Dimethylbenzene-1,2-diamine

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of metalacyclic iridium complexes as light emitting materials and organic light emitting diode device)

IT 739-88-8P 2620-79-3P 2620-83-9P 2622-63-1P 2622-67-5P 2622-70-0P 6528-75-2P 175712-72-8P 807610-00-0P 852673-38-2P 852673-39-3P 852673-40-6P 852673-41-7P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

(preparation of metalacyclic iridium complexes as light emitting materials and organic light emitting diode device)

L41 ANSWER 9 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:443763 HCAPLUS

DOCUMENT NUMBER: 143:145125

TITLE: Syntheses and Properties of Emissive Iridium(III) Complexes with Tridentate Benzimidazole Derivatives

AUTHOR(S): Yutaka, Tomona; Obara, Shinya; Ogawa, Satoshi; Nozaki, Koichi; Ikeda, Noriaki; Ohno, Takeshi; Ishii, Youichi; Sakai, Ken; Haga, Masa-aki

CORPORATE SOURCE: Department of Applied Chemistry, Faculty of Science and Engineering, Chuo University, Tokyo, Bunkyo-ku, 112-8551, Japan

SOURCE: Inorganic Chemistry (2005), 44(13), 4737-4746  
CODEN: INOCAJ; ISSN: 0020-1669

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Novel emissive Ir(III) complexes having the coordination environments of [Ir(N-N-N)2]3+, [Ir(N-N-N)(bpy)Cl]2+, and [Ir(N-N-N)(N-C-N)]2+ with 2,6-bis(1-methylbenzimidazol-2-yl)pyridine (L1, N-N-N), 1,3-bis(1-methylbenzimidazol-2-yl)benzene (L2H, N-C-N), 4'-(4-methylphenyl)-2,2':6',2''-terpyridine (ttpy, N-N-N) were synthesized and their photophys. and electrochem. properties studied. The Ir(III) complexes exhibited phosphorescent emissions in the 500-600 nm region, with lifetimes ranging from .apprx.1-10  $\mu$ s at 295 K. Anal. of the 0-0 energies and the redox potentials indicated that the lowest excited state of [Ir(L1)(L2)]2+ possessed the highest contribution of 3MLCT (MLCT = metal-to-ligand charge transfer) among the Ir(III) complexes, reflecting the  $\sigma$ -donating ability of the tridentate ligand, ttpy < L1 < L2. The emission quantum yields

( $\Phi$ ) of the Ir(III) complexes ranged from 0.037 to 0.19, and the highest  $\Phi$  value (0.19) was obtained for [Ir(L1)(bpy)Cl] $^{2+}$ . Radiative rate consts. (kr) were  $1.2 \times 10^4 \text{ s}^{-1}$  for [Ir(ttpy) $^{2+}$ ],  $3.7 \times 10^4 \text{ s}^{-1}$  for [Ir(L1)(bpy)Cl] $^{2+}$ ,  $3.8 \times 10^4 \text{ s}^{-1}$  for [Ir(ttpy)(bpy)Cl] $^{2+}$ ,  $3.9 \times 10^4 \text{ s}^{-1}$  for [Ir(L1) $^{2+}$ ], and  $6.6 \times 10^4 \text{ s}^{-1}$  for [Ir(L1)(L2)] $^{2+}$ . The highest radiative rate for [Ir(L1)(L2)] $^{2+}$  with the highest contribution of 3MLCT could be explained in terms of the singlet-triplet mixing induced by spin-orbit coupling of 5d electrons in the MLCT electronic configurations.

IT 859231-92-8P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(preparation and crystal structure of)

RN 859231-92-8 HCAPLUS

CN Iridium(2+), [2,6-bis(1-methyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C] [2,2'-(2,6-pyridinediyl- $\kappa$ N)bis[1-methyl-1H-benzimidazole- $\kappa$ N3]]-, (OC-6-12)-, bis[tetraphenylborate(1-)], compd. with acetonitrile (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 75-05-8

CMF C2 H3 N

 $\text{H}_3\text{C}-\text{C}\equiv\text{N}$ 

CM 2

CRN 859231-91-7

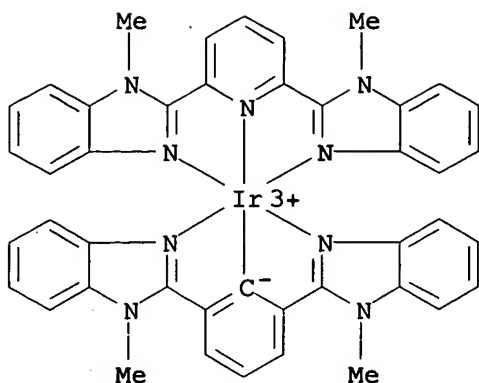
CMF C43 H34 Ir N9 . 2 C24 H20 B

CM 3

CRN 858861-59-3

CMF C43 H34 Ir N9

CCI CCS

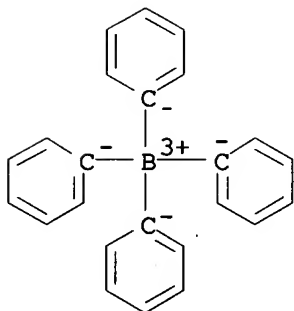


CM 4

CRN 4358-26-3

CMF C24 H20 B

CCI CCS



IT 858861-60-6P 859231-91-7P

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(preparation and phosphorescence and cyclic voltammetry of)

RN 858861-60-6 HCAPLUS

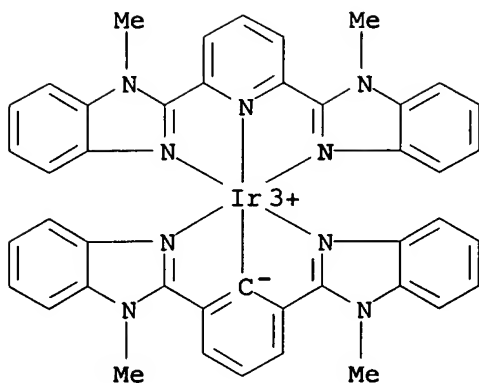
CN Iridium(2+), [2,6-bis(1-methyl-1H-benzimidazol-2-yl-κN3)phenyl-κC] [2,2'-(2,6-pyridinediyl-κN)bis[1-methyl-1H-benzimidazole-κN3]]-, (OC-6-12)-, bis[hexafluorophosphate(1-)] (9CI) (CA INDEX NAME)

CM 1

CRN 858861-59-3

CMF C43 H34 Ir N9

CCI CCS

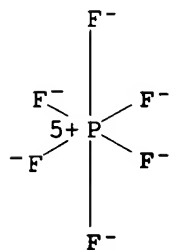


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



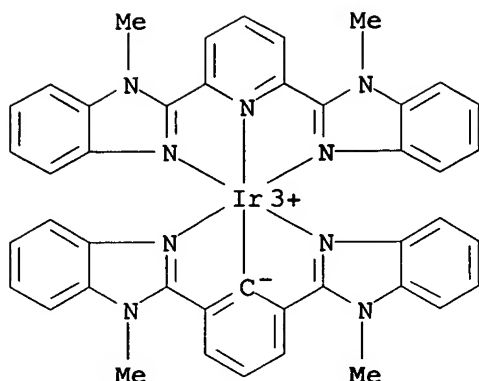
RN 859231-91-7 HCAPLUS  
 CN Iridium(2+), [2,6-bis(1-methyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C] [2,2'-(2,6-pyridinediyl- $\kappa$ N)bis[1-methyl-1H-benzimidazole- $\kappa$ N3]]-, (OC-6-12)-, bis[tetraphenylborate(1-)] (9CI) (CA INDEX NAME)

CM 1

CRN 858861-59-3

CMF C43 H34 Ir N9

CCI CCS

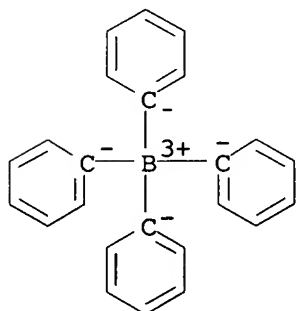


CM 2

CRN 4358-26-3

CMF C24 H20 B

CCI CCS



CC 78-7 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 29, 72, 73, 74, 75

IT **Phosphorescence**  
 (quantum yields; of iridium benzimidazolylpyridine/benzimidazolylbenzene and bipyridine terpyridine complexes)

IT 858861-61-7P 859231-92-8P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (preparation and crystal structure of)

IT 858861-58-2P  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation); PROC (Process)  
 (preparation and phosphorescence and cyclic voltammetry and crystal structure of)

IT 858861-53-7P 858861-55-9P 858861-60-6P  
 859231-91-7P  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical

process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(preparation and phosphorescence and cyclic voltammetry of)

REFERENCE COUNT: 72 THERE ARE 72 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 10 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:422509 HCAPLUS

DOCUMENT NUMBER: 143:141667

TITLE: Electrochemiluminescence studies of the cyclometalated iridium(III) L2Ir(acetyl acetonate) complexes

AUTHOR(S): Kapturkiewicz, Andrzej; Nowacki, Jacek; Borowicz, Pawel

CORPORATE SOURCE: Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, 01-224, Pol.

SOURCE: Electrochimica Acta (2005), 50(16-17), 3395-3400

CODEN: ELCAAV; ISSN: 0013-4686

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Electrogenated chemiluminescence (ECL) studies have been performed for the iridium(III) cyclometalated L2Ir(acac) complexes in 0.1 M (n-C4H9)4NPF6 acetonitrile-dioxane (1:1, v,v) solns. using a triple-potential-step technique. Electron transfer between electrochem. generated L2Ir(acac)+ cations and A- (radical anions of aromatic nitriles) leads to generation of the excited 3\*L2Ir(acac) species. Extremely high ECL efficiencies (up to 0.55) close to the excited 3\*L2Ir(acac) luminescence yields have been found.

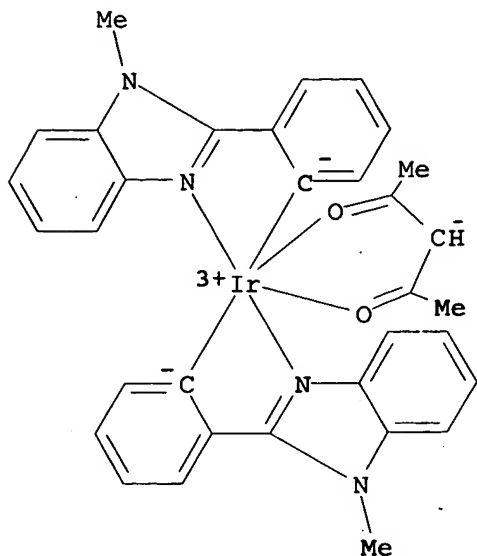
IT 852875-76-4 859161-69-6

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)

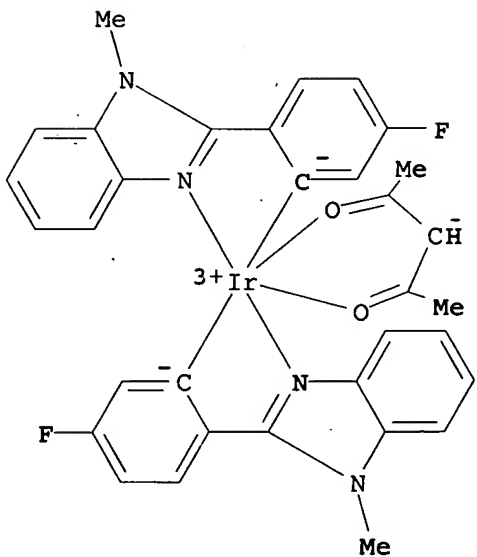
(electrochemiluminescence of cyclometalated iridium acetyl acetonate complexes studied by using triple potential step methods)

RN 852875-76-4 HCAPLUS

CN Iridium, bis[2-(1-methyl-1H-benzimidazol-2-yl-κN3)phenyl-κC](2,4-pentanedionato-κO,κO')-, (OC-6-33)-  
(9CI) (CA INDEX NAME)



RN 859161-69-6 HCAPLUS  
 CN Iridium, bis[5-fluoro-2-(1-methyl-1H-benzimidazol-2-yl-  
 κN3)phenyl-κC] (2,4-pentanedionato-κO,κO') -  
 , (OC-6-33) (9CI) (CA INDEX NAME)



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 22, 72, 76  
 IT Luminescence, chemiluminescence  
 (electrochemiluminescence; electrochemiluminescence of



cyclometalated iridium acetyl acetonate complexes studied by using triple potential step methods)

IT 337526-85-9 337526-88-2 343978-79-0 343978-94-9  
435294-03-4 650583-64-5 852875-76-4  
859161-69-6 859161-70-9

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)  
(electrochemiluminescence of cyclometalated iridium acetyl acetonate complexes studied by using triple potential step methods)

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 11 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:212410 HCAPLUS

DOCUMENT NUMBER: 142:306129

TITLE: Organometallic complex for organic electroluminescent device

INVENTOR(S): Inoue, Eiko; Tokuda, Atsushi; Yamazaki, Hiroko; Seo, Satoshi

PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 37 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005060374	A2	20050310	JP 2004-217219	2004 0726

PRIORITY APPLN. INFO.: JP 2003-280667 A  
2003  
0728

OTHER SOURCE(S): MARPAT 142:306129  
GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
\*

AB Disclosed are organometallic complexes, suited for use as a phosphorescent substance in an organic electroluminescent device, represented by I [R1-4 = H, halo, alkyl, etc.; R5 and R6 = H and alkyl; Ar = arylene, and heterocyclic residue; M = Group VIII element; n = 1 or 2; L = monoanion ligand having diketone structure, monoanionic bidentate chelate ligand having carboxylic group, and monoanionic bidentate

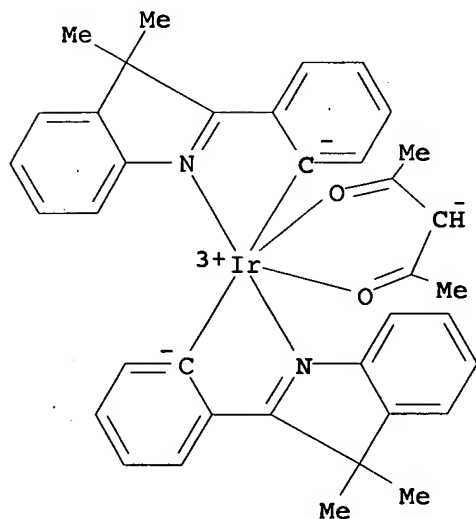
chelate ligand having phenol hydroxy group], II [R1-8 = H, halo, alkyl, etc.; R9 and R10 = H and alkyl; Ar = arylene, and heterocyclic residue; M = Group VIII element; n = 1 or 2; L = monoanion ligand having diketone structure, monoanionic bidentate chelate ligand having carboxylic group, and monoanionic bidentate chelate ligand having phenol hydroxy group], III, and IV [R1-10 = H, halo, alkyl, etc.; Ar = arylene, and heterocyclic residue; M = Group VIII element; n = 1 or 2; L = monoanion ligand having diketone structure, monoanionic bidentate chelate ligand having carboxylic group, and monoanionic bidentate chelate ligand having phenol hydroxy group].

IT 847606-35-3P 847606-37-5P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(phosphorescent organometallic complex for organic electroluminescent device)

RN 847606-35-3 HCAPLUS

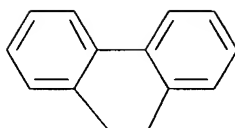
CN Iridium, bis[2-(3,3-dimethyl-3H-indol-2-yl-κN)phenyl-κC](2,4-pentanedionato-κO,κO') - (9CI) (CA INDEX NAME)



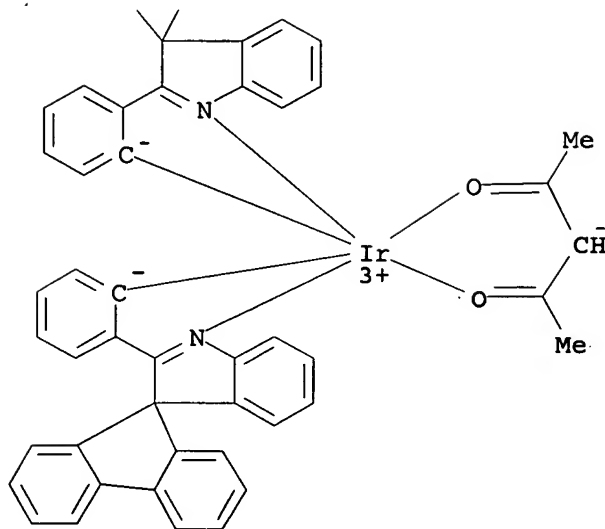
RN 847606-37-5 HCAPLUS

CN Iridium, (2,4-pentanedionato-κO,κO')bis[2-(spiro[9H-fluorene-9,3'-[3H]indol]-2'-yl-κN)phenyl-κC] - (9CI) (CA INDEX NAME)

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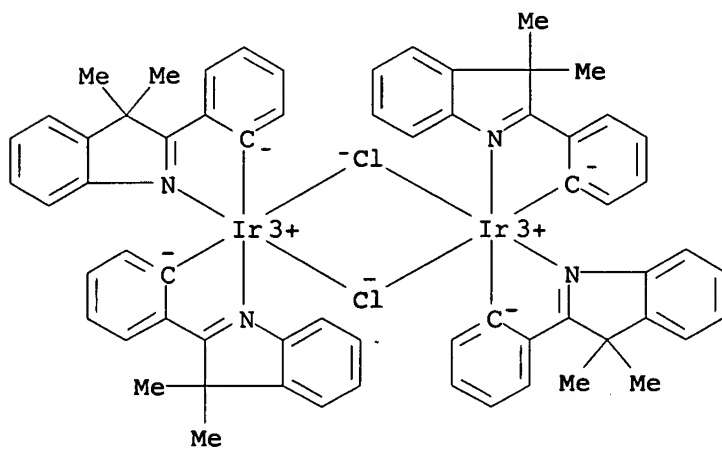


IT 847606-34-2P 847606-36-4P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)

(phosphorescent organometallic complex for organic electroluminescent device)

RN 847606-34-2 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[2-(3,3-dimethyl-3H-indol-2-yl- $\kappa$ N)phenyl- $\kappa$ C]di- (9CI) (CA INDEX NAME)



RN 847606-36-4 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[2-(spiro[9H-fluorene-9,3'-[3H]indol]-2'-yl- $\kappa$ N)phenyl- $\kappa$ C]di- (9CI) (CA INDEX NAME)

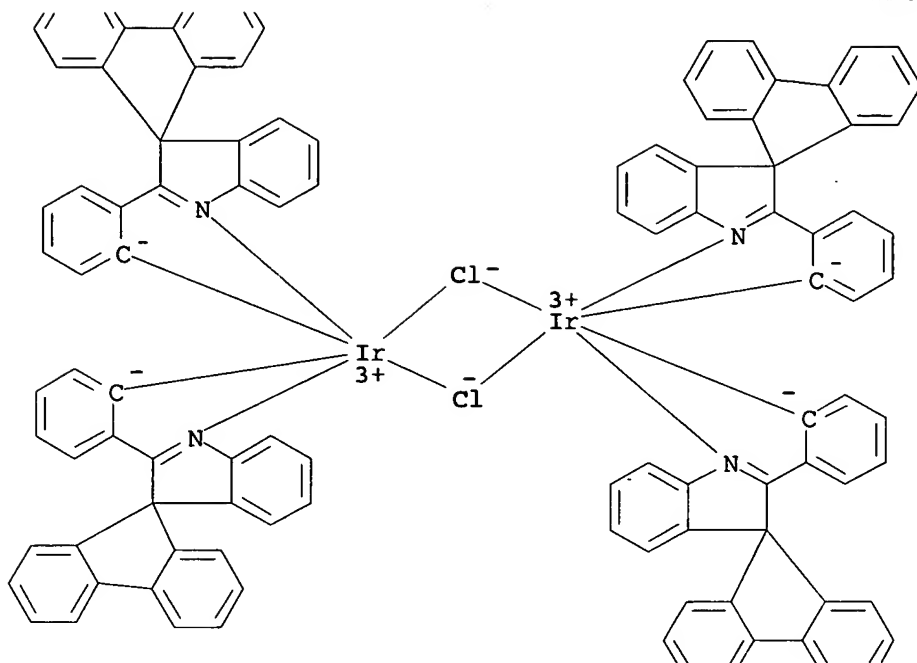
Garrett 10/729,712

12/15/2005

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PAGE 2-A



PAGE 3-A

IC ICM C07F015-00  
ICS C07D209-08; C09K011-06; H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 29, 74, 78

ST organometallic complex **phosphorescent** substance org  
**electroluminescent** device

IT **Electroluminescent** devices  
(displays; **phosphorescent** organometallic complex for organic **electroluminescent** device)

IT **Luminescent** screens  
(**electroluminescent**; **phosphorescent** organometallic complex for organic **electroluminescent** device)

IT Coordination compounds  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(ortho metal complex; **phosphorescent** organometallic complex for organic **electroluminescent** device)

IT **Electroluminescent** devices  
**Phosphorescent** substances  
(**phosphorescent** organometallic complex for organic **electroluminescent** device)

IT Organometallic compounds  
 Spiro compounds  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (phosphorescent organometallic complex for organic  
 electroluminescent device)

IT 847606-35-3P 847606-37-5P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (phosphorescent organometallic complex for organic  
 electroluminescent device)

IT 71-43-2, Benzene, reactions 100-63-0, Phenylhydrazine  
 123-54-6, Acetylacetone, reactions 611-70-1,  
 Phenylisopropylketone 1989-33-9, 9-Fluorene-carboxylic acid  
 717927-65-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (phosphorescent organometallic complex for organic  
 electroluminescent device)

IT 1603-73-2P, 9-Benzoylfluorene 4643-66-7P 6636-32-4P  
 847606-34-2P 847606-36-4P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (phosphorescent organometallic complex for organic  
 electroluminescent device)

L41 ANSWER 12 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:71188 HCAPLUS

DOCUMENT NUMBER: 142:186917

TITLE: Metal complex compound and organic  
 electroluminescent device using same

INVENTOR(S): Okuda, Fumio; Iwakuma, Toshihiro; Yamamichi,  
 Keiko; Hosokawa, Chishio

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 684 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005007767	A2	20050127	WO 2004-JP10687	2004 0721

WO 2005007767 A3 20050331

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,  
 CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG,  
 ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
 KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
 MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL,  
 PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
 TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
 ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH,

CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU,  
MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI,  
CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.:

JP 2003-199995

A

2003

0722

AB Disclosed is a metal complex compound of a specific structure which contains a metal such as iridium. Also disclosed is an organic electroluminescent device comprising an organic thin film layer which is interposed between a pair of electrodes and composed of one or more layers including a light-emitting layer, wherein at least one layer of the organic thin film layer contains the metal complex compound. The organic electroluminescent device emits light when a voltage is applied between the electrodes, and has high luminous efficiency and long life. The metal complex compound is used for realizing such an organic electroluminescent device. suitable electroluminescent displays.

IT 832109-87-2P 832109-89-4P

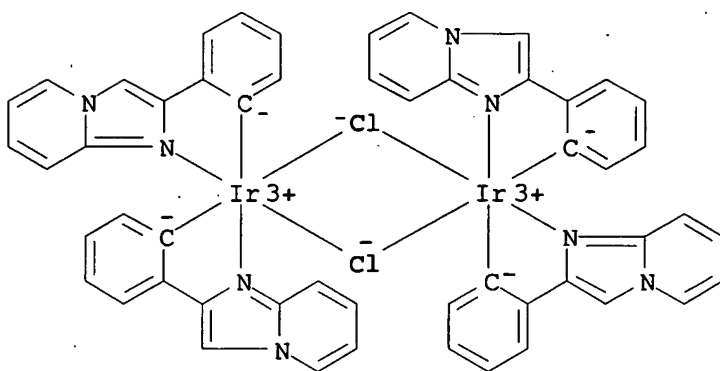
RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT: (Reactant or reagent)

(metal complex compound for organic electroluminescent device)

RN 832109-87-2 HCAPLUS

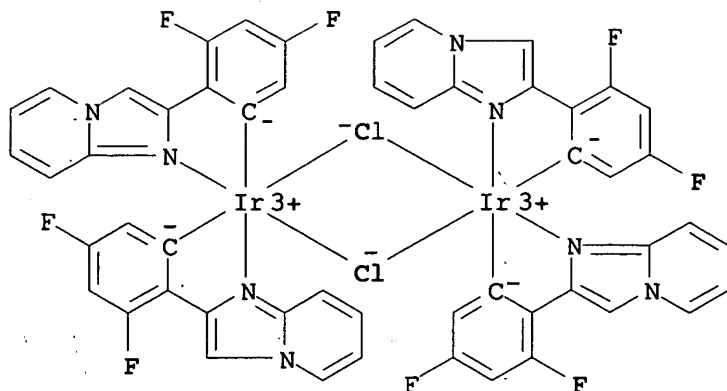
CN Iridium, di- $\mu$ -chlorotetrakis[2-(imidazo[1,2-a]pyridin-2-yl- $\kappa$ N1)phenyl- $\kappa$ C]di- (9CI) (CA INDEX NAME)



RN 832109-89-4 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[3,5-difluoro-2-(imidazo[1,2-a]pyridin-2-yl- $\kappa$ N1)phenyl- $\kappa$ C]di- (9CI) (CA INDEX NAME)



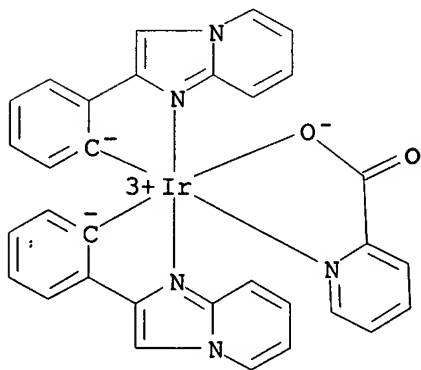


IT 832109-88-3P 832109-90-7P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(metal complex compound for organic electroluminescent device)

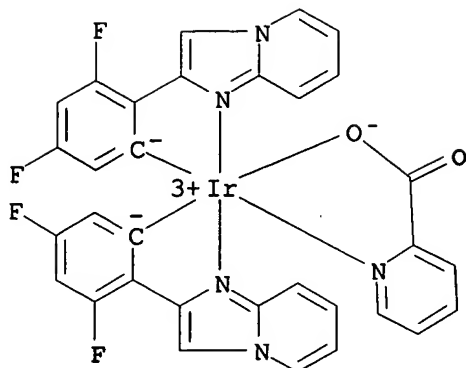
RN 832109-88-3 HCAPLUS

CN Iridium, bis[2-(imidazo[1,2-a]pyridin-2-yl-κN1)phenyl-κC](2-pyridinecarboxylato-κN1,κO2)- (9CI) (CA INDEX NAME)



RN 832109-90-7 HCAPLUS

CN Iridium, bis[3,5-difluoro-2-(imidazo[1,2-a]pyridin-2-yl-κN1)phenyl-κC](2-pyridinecarboxylato-κN1,κO2)- (9CI) (CA INDEX NAME)



- IC ICM C09K  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 ST metal complex org **electroluminescent** device  
 IT **Electroluminescent** devices  
 (displays; metal complex compound and organic  
 electroluminescent device using same)  
 IT **Luminescent** screens  
 Luminescent substances  
 (electroluminescent; metal complex compound and organic  
 electroluminescent device using same)  
 IT 70-11-1,  $\alpha$ -Bromoacetophenone 74-88-4, Iodomethane,  
 reactions 98-98-6,  $\alpha$ -Pyridinecarboxylic acid 504-29-0,  
 2-Aminopyridine 670-96-2, 2-Phenylimidazole 10025-83-9,  
 Iridium chloride (IrCl<sub>3</sub>) 53591-79-0, 4'-(2,4-  
 Difluorophenyl)acetophenone  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (metal complex compound for organic **electroluminescent**  
 device)  
 IT 2411-77-0P 3475-07-8P 4105-21-9P 102429-07-2P 769093-92-7P  
 832109-87-2P 832109-89-4P 832109-91-8P  
 832109-93-0P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (metal complex compound for organic **electroluminescent**  
 device)  
 IT 832109-88-3P 832109-90-7P 832109-92-9P  
 832109-94-1P  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered  
 material use); PREP (Preparation); USES (Uses)  
 (metal complex compound for organic **electroluminescent**  
 device)

L41 ANSWER 13 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:1079756 HCAPLUS

DOCUMENT NUMBER: 142:45518

TITLE: Organic **electroluminescent** material,  
 organic **electroluminescent** device,  
 and heterocycle-containing iridium complex  
 compound

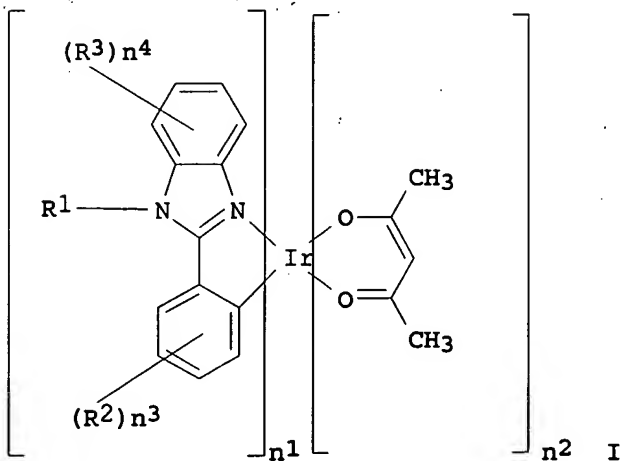
INVENTOR(S): Takada, Ichinori; Ishibashi, Tadashi; Yamada, Jiro; Tamura, Shinichiro  
 PATENT ASSIGNEE(S): Sony Corporation, Japan  
 SOURCE: Eur. Pat. Appl., 21 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1486552	A1	20041215	EP 2004-13470	2004 0608

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
 MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ,  
 EE, HU, PL, SK, HR

JP 2005002053	A2	20050106	JP 2003-167828	2003 0612
US 2005008895	A1	20050113	US 2004-864112	2004 0608
PRIORITY APPLN. INFO.: JP 2003-167828				A 2003 0612

OTHER SOURCE(S): MARPAT 142:45518  
 GI



AB Heterocycle-containing iridium complex compds. are described by the general formula I (R1 = lower alkyl or (un)substituted Ph group;

R2 and R3 = independently selected alkyl, alkyloxy, and cyano groups; either n1 = 2 and n2 = 1 or n1 = 3 and n2 = 0; and n3 = 0-4; and n4 = 0-4). Organic electroluminescent materials comprising the compds. and electroluminescent devices employing them are also described.

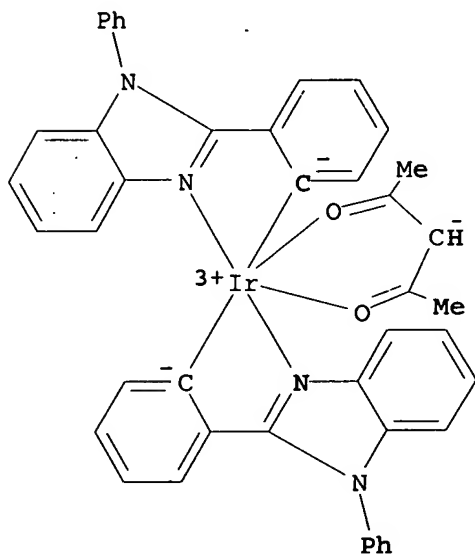
IT 725251-25-2P 807610-01-1P 807610-02-2P  
807610-04-4P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(heterocycle-containing iridium complexes and electroluminescent materials comprising them and electroluminescent device devices using the materials)

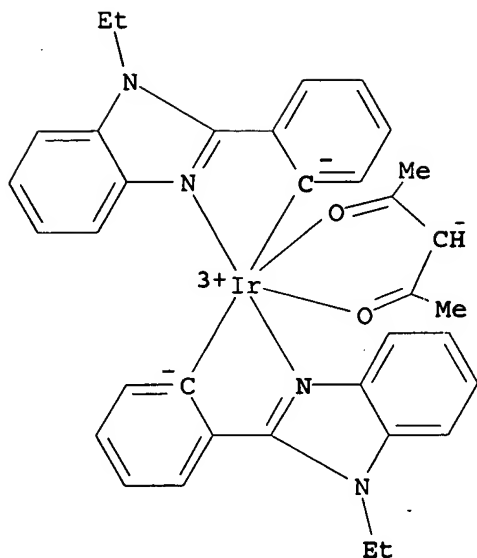
RN 725251-25-2 HCAPLUS

CN Iridium, (2,4-pentanedionato-κO,κO')bis[2-(1-phenyl-1H-benzimidazol-2-yl-κN3)phenyl-κC]- (9CI) (CA INDEX NAME)

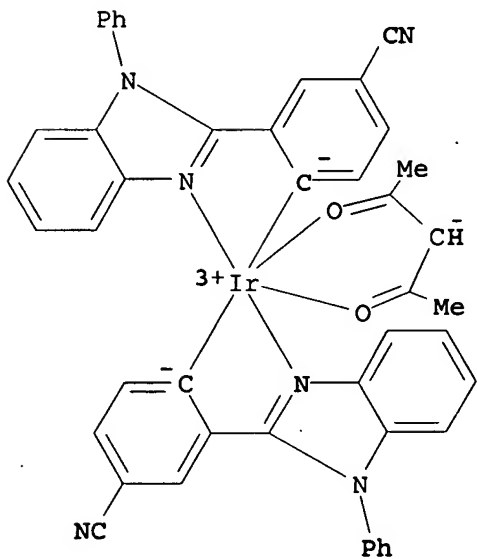


RN 807610-01-1 HCAPLUS

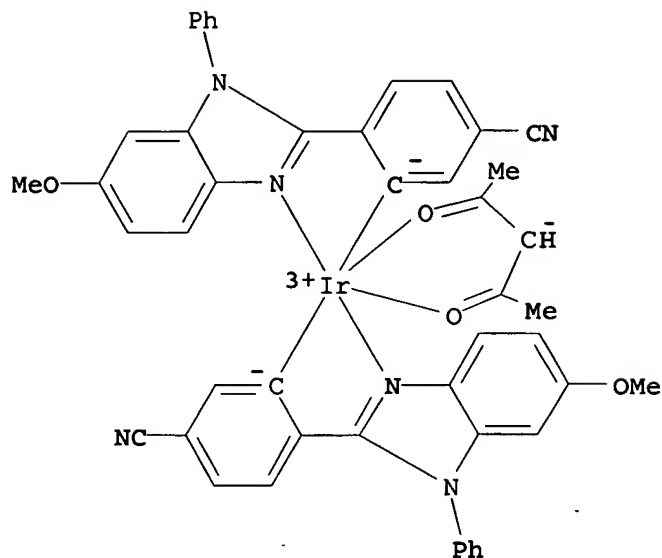
CN Iridium, bis[2-(1-ethyl-1H-benzimidazol-2-yl-κN3)phenyl-κC](2,4-pentanedionato-κO,κO')- (9CI) (CA INDEX NAME)



RN 807610-02-2 HCAPLUS  
 CN Iridium, bis[4-cyano-2-(1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C] (2,4-pentanedionato- $\kappa$ O, $\kappa$ O') - (9CI) (CA INDEX NAME)



RN 807610-04-4 HCAPLUS  
 CN Iridium, bis[5-cyano-2-(6-methoxy-1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C] (2,4-pentanedionato- $\kappa$ O, $\kappa$ O') - (9CI) (CA INDEX NAME)

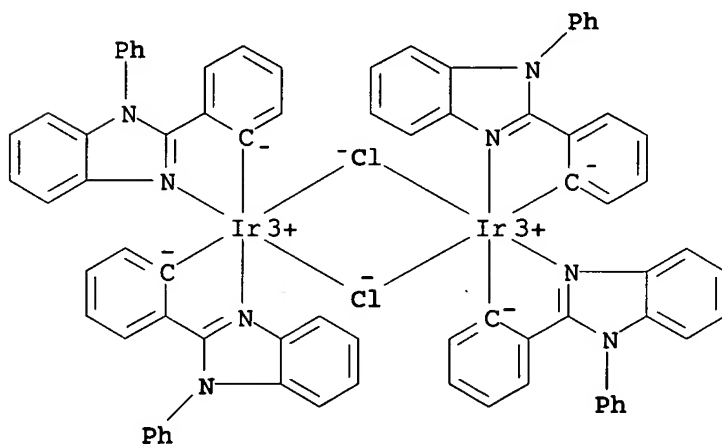


IT 807610-00-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(heterocycle-containing iridium complexes and electroluminescent materials comprising them and electroluminescent device devices using the materials)

RN 807610-00-0 HCAPLUS

CN Iridium, di-μ-chlorotetrakis[2-(1-phenyl-1H-benzimidazol-2-yl)-κN3]phenyl-κC]di- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14; H01L051-20; H01L051-30; C07D235-22

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 29, 76

ST heterocycle iridium complex electroluminescent material device

IT Luminescent substances  
(electroluminescent; heterocycle-containing iridium complexes and electroluminescent materials comprising them and electroluminescent device devices using the materials)

IT Electroluminescent devices  
(heterocycle-containing iridium complexes and electroluminescent materials comprising them and electroluminescent device devices using the materials)

IT 725251-25-2P 807610-01-1P 807610-02-2P 807610-04-4P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(heterocycle-containing iridium complexes and electroluminescent materials comprising them and electroluminescent device devices using the materials)

IT 123-54-6, 2,4-Pentanedione, reactions 591-50-4, Iodobenzene 2622-67-5 6528-75-2 6943-23-3 16941-25-6 175712-80-8  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(heterocycle-containing iridium complexes and electroluminescent materials comprising them and electroluminescent device devices using the materials)

IT 807610-00-0P 807610-03-3P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(heterocycle-containing iridium complexes and electroluminescent materials comprising them and electroluminescent device devices using the materials)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 14 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:450767 HCAPLUS

DOCUMENT NUMBER: 141:23731

TITLE: Cost-effective preparation of asymmetric transition metal complexes

INVENTOR(S): Akiyama, Seiji; Yabe, Masayoshi; Oba, Shiho

PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 30 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004155728	A2	20040603	JP 2002-324175	2002 1107

PRIORITY APPLN. INFO.: JP 2002-324175

2002  
1107OTHER SOURCE(S): MARPAT 141:23731  
GI\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
\*

AB The complexes I [M2 = transition metal; n2 = the number of bidentate ligand = (valence of M2) - 1; Z = direct bond, 2-4-valent linkage; Q1, Q2 = C, N; W1-W4 = H, substituent; W1W2, W2W3, and W3W4 may form ring; X, Y = O, S, N, P] are prepared from alkali metal or alkaline earth metal complexes II (M1 = alkali metal, alkaline earth metal; n = the number of ligand = valence of M1; X, Y = same as above). Thus, 2-(2-pyridyl)benzothiophene was treated with IrCl3 to give III, which was treated with Na acetylacetonate to give IV.

IT 683262-90-0P

RL: IMF (Industrial manufacture); SPN (Synthetic preparation);

PREP (Preparation)

(preparation of asym. transition metal complexes by treatment of sym. transition metal complexes with alkali metal or alkaline earth metal complexes)

RN 683262-90-0 HCAPLUS

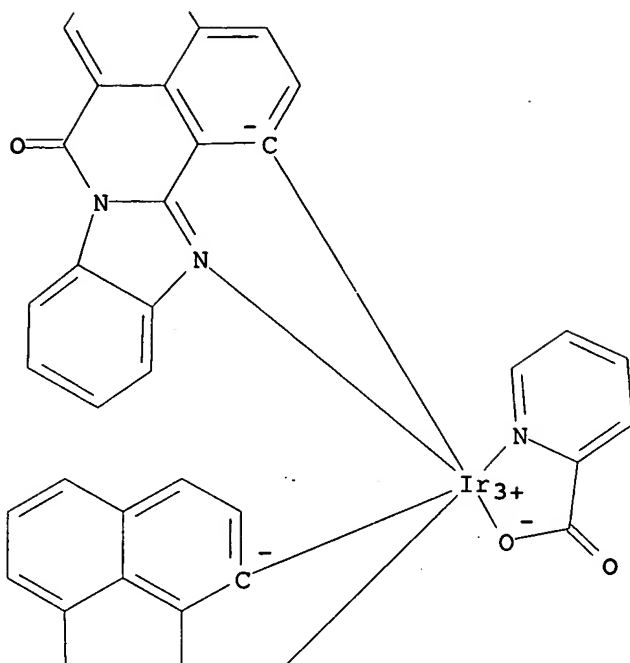
CN Iridium, bis(7-oxo-7H-benzimidazo[2,1-a]benz[de]isoquinolin-1-yl- $\kappa$ C1, $\kappa$ N13) (2-pyridinecarboxylato- $\kappa$ N1, $\kappa$ O2) - (9CI) (CA INDEX NAME)



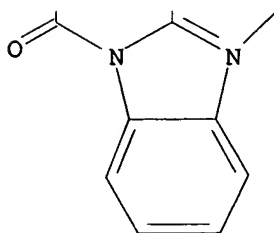
PAGE 1-A



PAGE 2-A



PAGE 3-A



IT 683262-88-6P

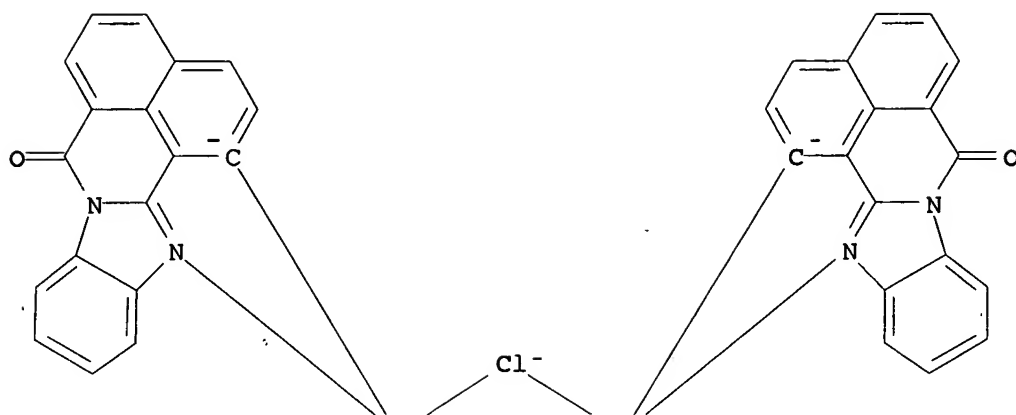
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of asym. transition metal complexes by treatment of sym. transition metal complexes with alkali metal or alkaline earth metal complexes)

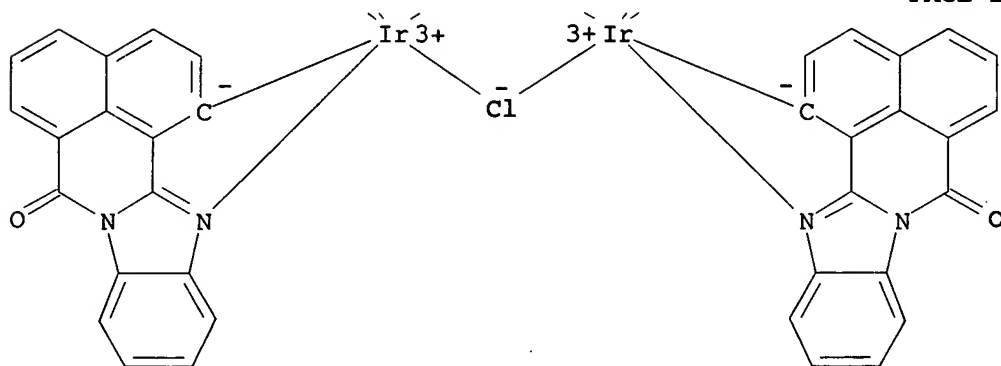
RN 683262-88-6 HCAPLUS

CN Iridium, di-μ-chlorotetrakis(7-oxo-7H-benzimidazo[2,1-a]benz[de]isoquinolin-1-yl-κC1,κN13)di- (9CI) (CA INDEX NAME)

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PAGE 2-A



IC ICM C07D213-79  
 ICS C07D401-04; C07D409-04; C07D417-10; C07D471-06; C07F015-00  
 CC 29-13 (Organometallic and Organometalloidal Compounds)  
 IT 343978-79-0P 629626-73-9P 664997-18-6P 683262-90-0P  
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation);  
 PREP (Preparation)  
 (preparation of asym. transition metal complexes by treatment of  
 sym. transition metal complexes with alkali metal or alkaline earth  
 metal complexes)

IT 7439-88-5DP, Iridium, N-(2-pyridyl)carbazole binuclear complexes  
23866-67-3DP, N-(2-Pyridyl)carbazole, iridium binuclear complexes  
23866-67-3P 343978-72-3P 683262-88-6P 697801-10-8P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)  
(preparation of asym. transition metal complexes by treatment of  
sym. transition metal complexes with alkali metal or alkaline earth  
metal complexes)

L41 ANSWER 15 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:431623 HCAPLUS

DOCUMENT NUMBER: 141:140588

TITLE: Highly Phosphorescent  
Bis-Cyclometalated Iridium Complexes  
Containing Benzoimidazole-Based Ligands

AUTHOR(S): Huang, Wei-Sheng; Lin, Jiann T.; Chien,  
Chin-Hsing; Tao, Yu-Tai; Sun, Shih-Sheng; Wen,  
Yuh-Sheng

CORPORATE SOURCE: Department of Chemistry, National Central  
University, Chungli, Taiwan, 320, Peop. Rep.  
China

SOURCE: Chemistry of Materials (2004), 16(12),  
2480-2488

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 141:140588

AB New benzoimidazoles (bi) have been synthesized. These compds.  
readily undergo cyclometalation with iridium trichloride, and  
bis-cyclometalated iridium complexes, (bi)2Ir(acac) (bi =  
cyclometalated benzoimidazole; acac = acetylacetonate), can be  
isolated. One of the complexes, (fbi)2Ir(acac) (fbi =  
2-(9,9-diethyl-9H-fluoren-2-yl-1H-benzoimidazole)), was also  
characterized by single-crystal x-ray structural determination. Some of  
the complexes, (bi)2Ir(acac), are highly phosphorescent  
at ambient condition. Light-emitting devices  
using these complexes as dopants were fabricated, and the emission  
colors range from green to red. Some green- and yellow-emitting  
devices exhibit very high efficiencies.

IT 725251-24-1P

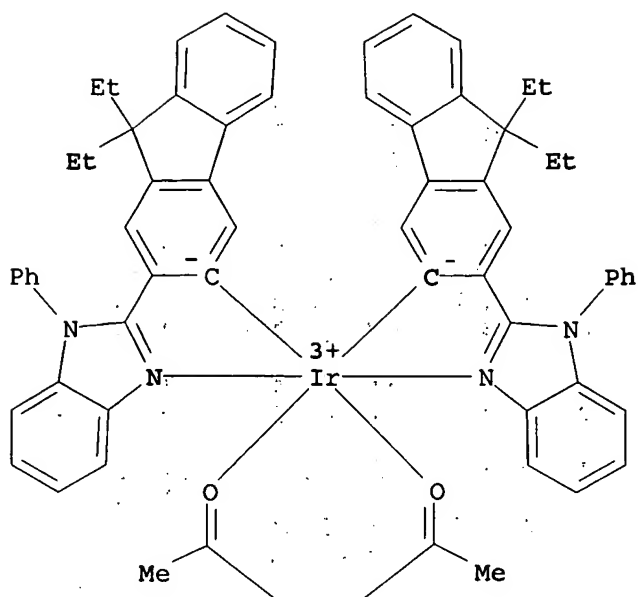
RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
process); PRP (Properties); SPN (Synthetic preparation); PREP  
(Preparation); PROC (Process)

(crystal structure; preparation of highly phosphorescent  
bis-cyclometalated iridium complexes containing  
benzoimidazole-based ligands)

RN 725251-24-1 HCAPLUS

CN Iridium, bis[9,9-diethyl-2-(1-phenyl-1H-benzimidazol-2-yl-  
κN3)-9H-fluoren-3-yl-κC] (2,4-pentanedionato-  
κO,κO')-, (OC-6-33)- (9CI) (CA INDEX NAME)

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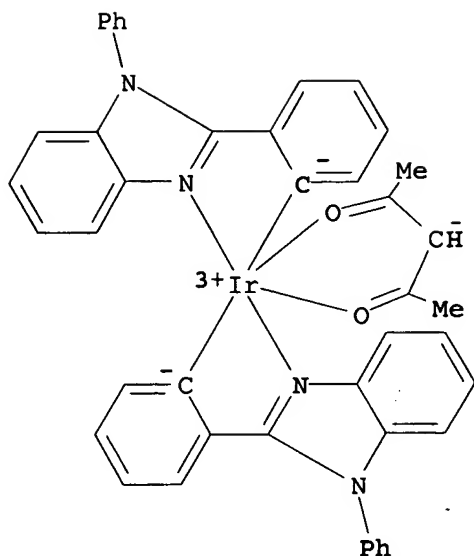
IT 725251-25-2P 725251-26-3P 725251-27-4P  
 725251-28-5P 725251-29-6P 725251-30-9P  
 725251-31-0P

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)

(preparation of highly phosphorescent bis-cyclometalated iridium complexes containing benzoimidazole-based ligands)

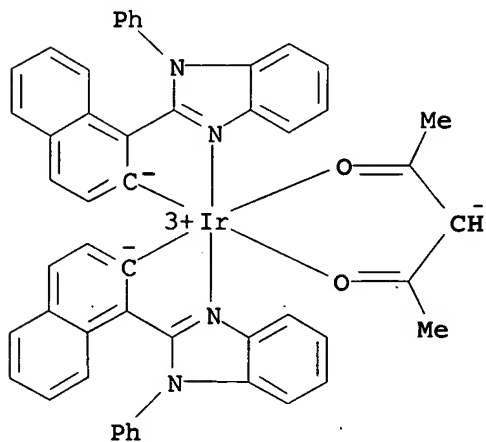
RN 725251-25-2 HCAPLUS

CN Iridium, (2,4-pentanedionato-κO,κO')bis[2-(1-phenyl-1H-benzimidazol-2-yl-κN3)phenyl-κC] - (9CI) (CA INDEX NAME)



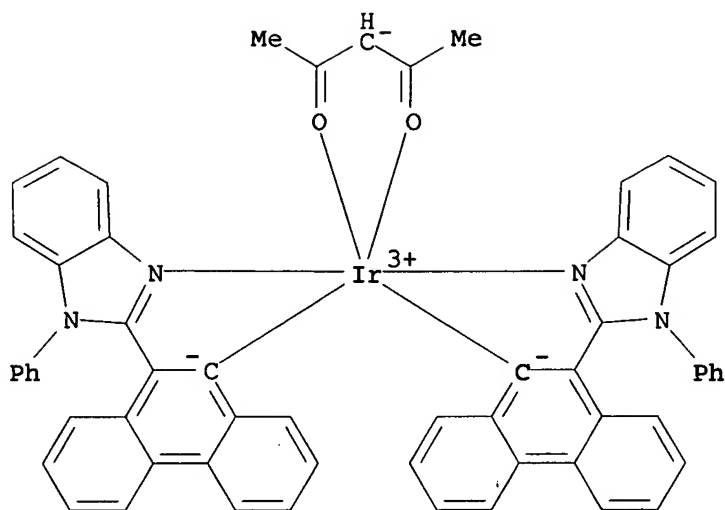
RN 725251-26-3 HCAPLUS

CN Iridium, (2,4-pentanedionato-κO,κO')bis[1-(1-phenyl-1H-benzimidazol-2-yl-κN3)-2-naphthalenyl-κC] - (9CI) (CA INDEX NAME)



RN 725251-27-4 HCAPLUS

CN Iridium, (2,4-pentanedionato-κO,κO')bis[10-(1-phenyl-1H-benzimidazol-2-yl-κN3)-9-phenanthrenyl-κC] - (9CI) (CA INDEX NAME)

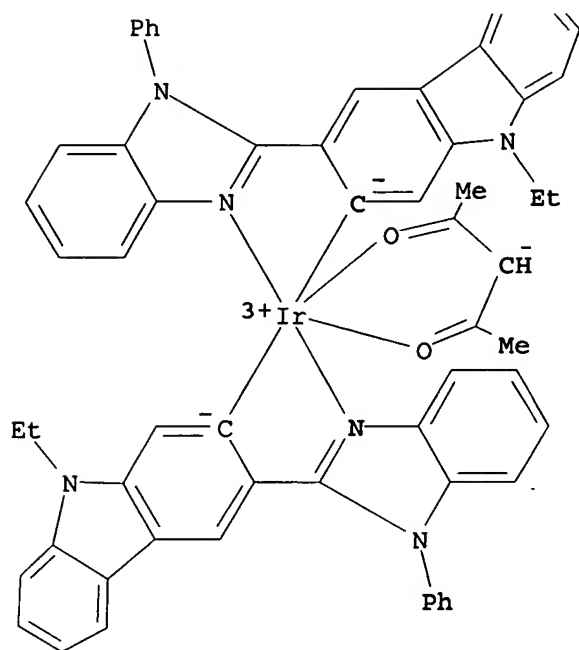


RN 725251-28-5 HCAPLUS  
 CN Iridium, bis[9-ethyl-3-(1-phenyl-1H-benzimidazol-2-yl-κN<sup>3</sup>)-9H-carbazol-2-yl-κC<sup>-</sup>](2,4-pentanedionato-κO,κO')-(9CI) (CA INDEX NAME)

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RN 725251-29-6 HCAPLUS  
CN Iridium, (2,4-pentanedionato- $\kappa^0, \kappa^0'$ )bis[3-(1-phenyl-1H-benzimidazol-2-yl- $\kappa^3$ )-2-thienyl- $\kappa^C$ ]- (9CI) (CA INDEX NAME)



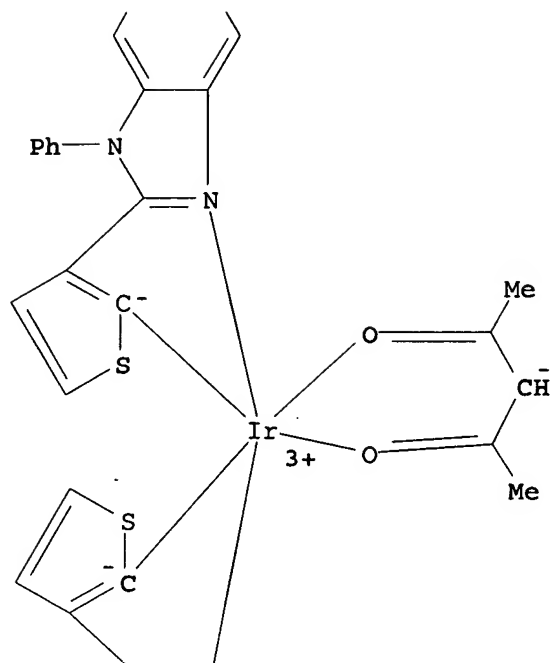
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12/15/2005

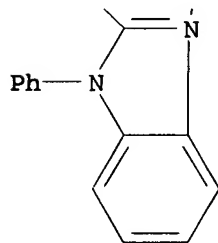
PAGE 1-A



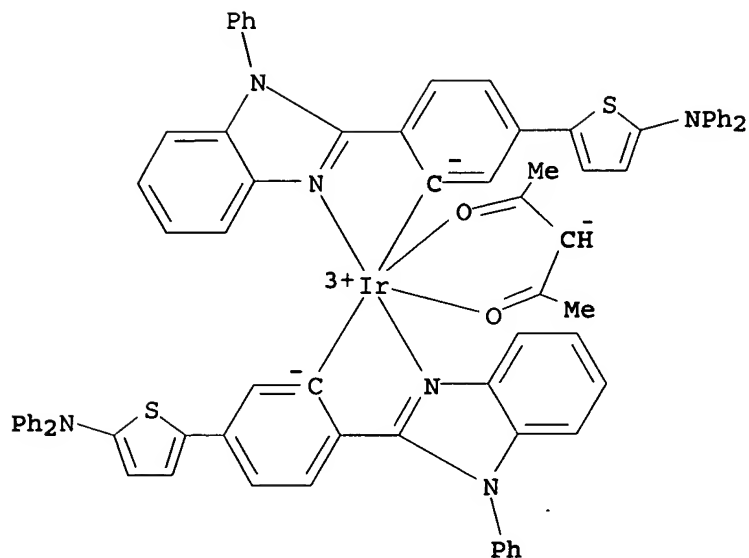
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PAGE 3-A

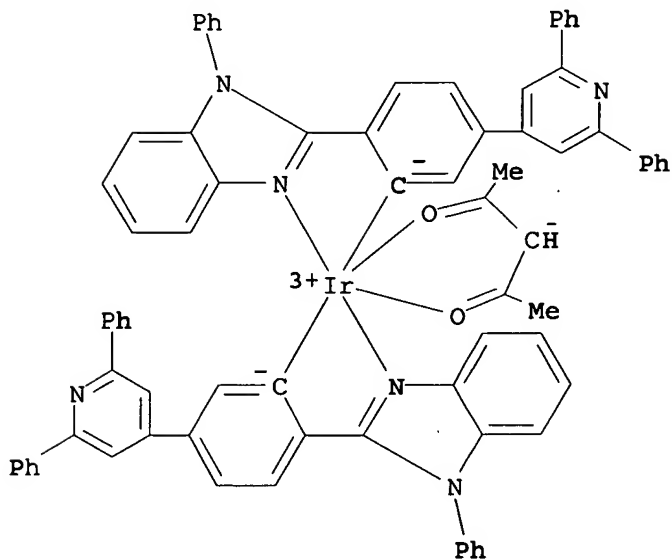


RN 725251-30-9 HCAPLUS  
 CN Iridium, bis[5-[5-(diphenylamino)-2-thienyl]-2-(1-phenyl-1H-benzimidazol-2-yl-κN3)phenyl-κC] (2,4-pentanedionato-κO,κO') - (9CI) (CA INDEX NAME)



RN 725251-31-0 HCAPLUS

CN Iridium, bis[5-(2,6-diphenyl-4-pyridinyl)-2-(1-phenyl-1H-benzimidazol-2-yl-κN3)phenyl-κC] (2,4-pentanedionato-κO,κO')- (9CI) (CA INDEX NAME)



CC 29-13 (Organometallic and Organometalloidal Compounds)  
Section cross-reference(s): 22, 72, 73, 75

ST bis cyclometalated iridium benzoimidazole complex prepn  
phosphorescence; electrochem redox bis cyclometalated  
iridium benzoimidazole complex; crystal mol structure

diethylfluorenyl benzoimidazole iridium acetylacetonate complex

IT Metalation  
(cyclometalation; preparation of highly **phosphorescent**  
bis-cyclometalated iridium complexes containing  
benzoimidazole-based ligands)

IT Redox reaction  
(electrochem.; preparation of highly **phosphorescent**  
bis-cyclometalated iridium complexes containing  
benzoimidazole-based ligands)

IT Emission spectra  
**Phosphorescence**  
Photophysics  
UV and visible spectra  
(preparation of highly **phosphorescent** bis-cyclometalated  
iridium complexes containing benzoimidazole-based ligands)

IT 725251-24-1P  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
process); PRP (Properties); SPN (Synthetic preparation); PREP  
(Preparation); PROC (Process)  
(crystal structure; preparation of highly **phosphorescent**  
bis-cyclometalated iridium complexes containing  
benzoimidazole-based ligands)

IT 2562-84-7P 2622-67-5P 725251-16-1P 725251-17-2P  
725251-18-3P 725251-19-4P 725251-20-7P 725251-21-8P  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
process); PRP (Properties); RCT (Reactant); SPN (Synthetic  
preparation); PREP (Preparation); PROC (Process); RACT (Reactant  
or reagent)  
(preparation of highly **phosphorescent** bis-cyclometalated  
iridium complexes containing benzoimidazole-based ligands)

IT 725251-25-2P 725251-26-3P 725251-27-4P  
725251-28-5P 725251-29-6P 725251-30-9P  
725251-31-0P  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
process); PRP (Properties); SPN (Synthetic preparation); PREP  
(Preparation); PROC (Process)  
(preparation of highly **phosphorescent** bis-cyclometalated  
iridium complexes containing benzoimidazole-based ligands)

IT 66-77-3, 1-Formylnaphthalene 100-52-7, Benzaldehyde, reactions  
123-54-6, 2,4-Pentanedione, reactions 498-62-4,  
3-Thiophenecarboxaldehyde 534-85-0, N-Phenyl-o-phenylenediamine  
4707-71-5, 9-Phenanthrenecarboxaldehyde 7570-45-8 97419-28-8  
496859-81-5, 9,9-Diethyl-9H-fluorene-2-carbaldehyde 725251-23-0  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of highly **phosphorescent** bis-cyclometalated  
iridium complexes containing benzoimidazole-based ligands)

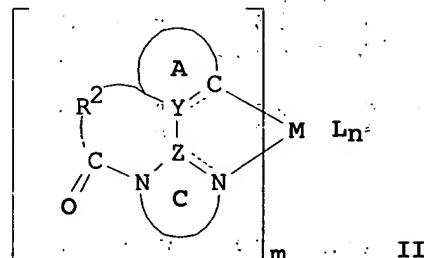
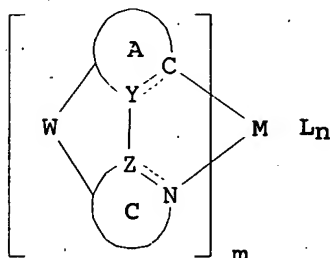
REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L41 ANSWER 16 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2004:351649 HCAPLUS  
DOCUMENT NUMBER: 140:382856  
TITLE: Organometallic complexes, their  
luminescent dyes and organic  
electroluminescent materials, and

INVENTOR(S): organic electroluminescent devices  
 Yabe, Masayoshi; Akiyama, Seiji; Sato, Hideki  
 PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 75 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004131464	A2	20040430	JP 2003-61247	2003 0307
PRIORITY APPLN. INFO.: JP 2002-236542				A 2002 0814

OTHER SOURCE(S): MARPAT 140:382856  
 GI



AB The complexes are I [L = bidentate ligand; M = Ir, Pt, Au, Pd; W = linkage containing C(O); W directly bond to N; A = 5- or 6-membered aromatic ring; C = 5-8-membered heterocycle; Y, Z = C, N; bond having broken line represents single or double bond; m = 1-3; n = 0-2; m + n = valent of M]. Organic electroluminescent devices having emitter layers containing I show high luminescence efficiency and long service life.

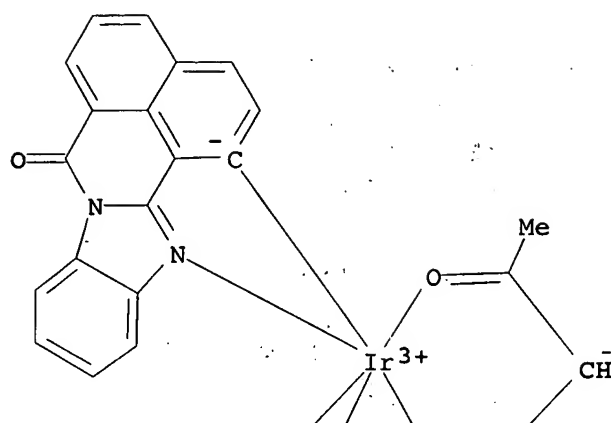
IT. 683262-82-0P 683262-84-2P 683262-86-4P  
 683262-90-0P

RL: DEV (Device component use); IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses) (organometallic complexes for luminescent dyes as dopants for emitter layers for organic electroluminescent devices)

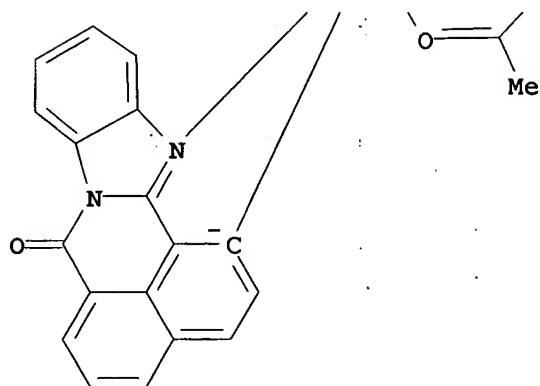
RN 683262-82-0 HCAPLUS

CN Iridium, bis(7-oxo-7H-benzimidazo[2,1-a]benz[de]isoquinolin-1-yl-κC1,κN13)(2,4-pentanedionato-κO,κO')-(9CI) (CA INDEX NAME)

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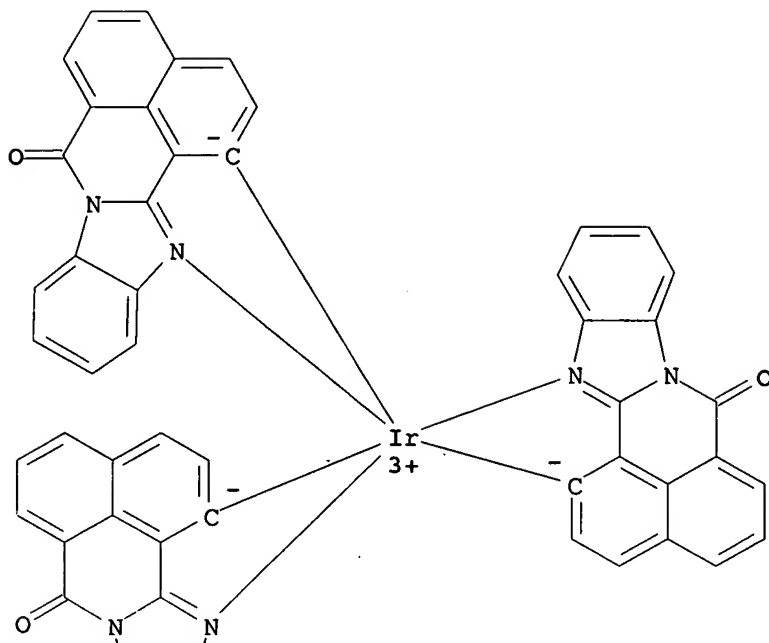


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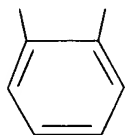


RN 683262-84-2 HCAPLUS  
CN Iridium, tris(7-oxo-7H-benzimidazo[2,1-a]benz[de]isoquinolin-1-yl-  
κC1,κN13)- (9CI) (CA INDEX NAME)

PAGE 1-A

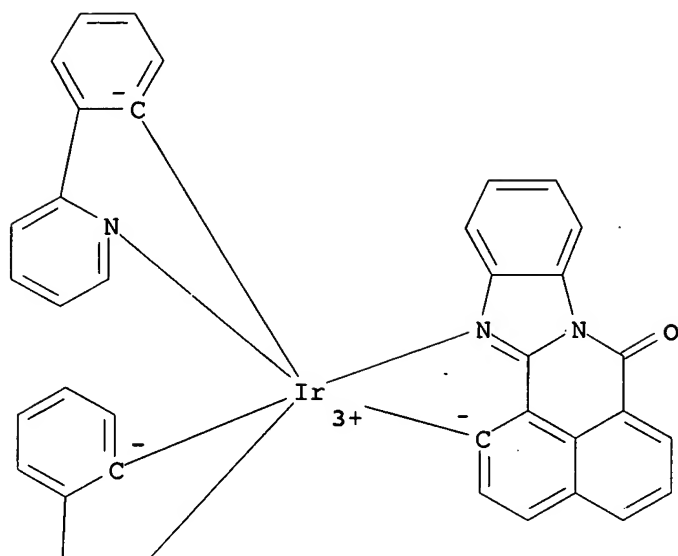


PAGE 2-A

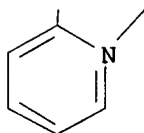


RN 683262-86-4 HCAPLUS  
 CN Iridium, (7-oxo-7H-benzimidazo[2,1-a]benz[de]isoquinolin-1-yl-  
 κC1,κN13)bis[2-(2-pyridinyl-κN)phenyl-κC] -  
 (9CI) (CA INDEX NAME)

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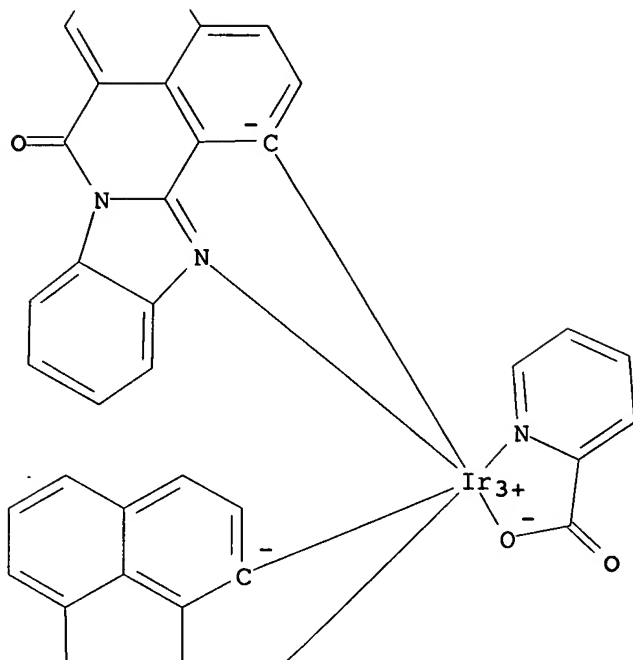
RN 683262-90-0 HCAPLUS  
 CN Iridium, bis (7-oxo-7H-benzimidazo[2,1-a]benz[de]isoquinolin-1-yl-  
 κC1,κN13) (2-pyridinecarboxylato-κN1,κO2) -  
 (9CI) (CA INDEX NAME)



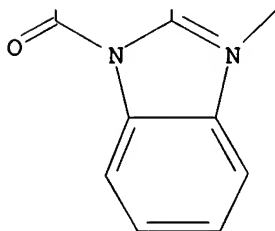
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PAGE 2-A

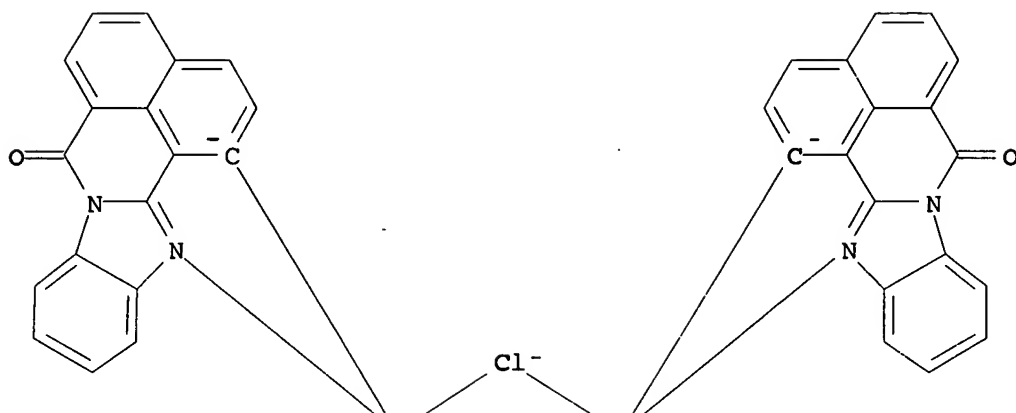


PAGE 3-A

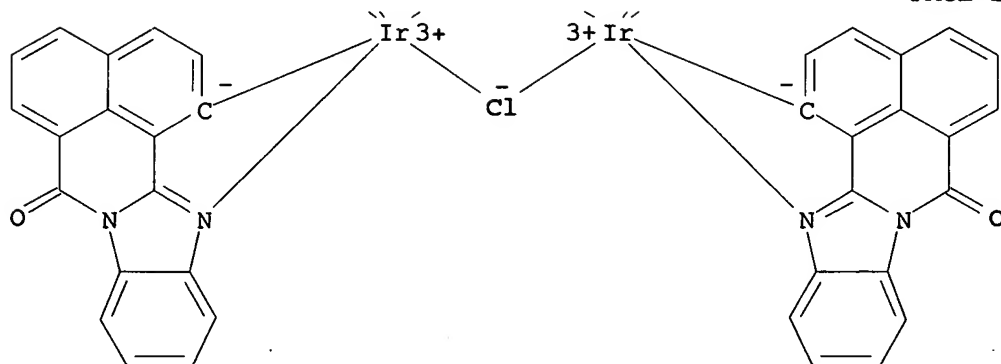


IT 683262-88-6P  
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (organometallic complexes for luminescent dyes as  
 dopants for emitter layers for organic electroluminescent  
 devices)  
 RN 683262-88-6 HCAPLUS  
 CN Iridium, di- $\mu$ -chlorotetrakis(7-oxo-7H-benzimidazo[2,1-  
 a]benz[de]isoquinolin-1-yl- $\kappa$ C1, $\kappa$ N13)di- (9CI) (CA  
 INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM C07F015-00  
 ICS C07D213-06; C07D213-79; C07D471-04; C09K011-06; H05B033-14  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 29, 41  
 ST organometallic complex dopant org electroluminescent device; iridium benzomethyloxypyridinoquinoline acetoacetate dopant org electroluminescent device  
 IT Luminescent substances

- (dyes; organometallic complexes for luminescent dyes as dopants for emitter layers for organic electroluminescent devices)
- IT Luminescent substances  
(electroluminescent; organometallic complexes for luminescent dyes as dopants for emitter layers for organic electroluminescent devices)
- IT Dyes  
(luminescent; organometallic complexes for luminescent dyes as dopants for emitter layers for organic electroluminescent devices)
- IT Electroluminescent devices  
(organometallic complexes for luminescent dyes as dopants for emitter layers for organic electroluminescent devices)
- IT 683262-80-8P 683262-82-0P 683262-84-2P  
683262-86-4P 683262-90-0P  
RL: DEV (Device component use); IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)  
(organometallic complexes for luminescent dyes as dopants for emitter layers for organic electroluminescent devices)
- IT 23749-58-8P 54815-47-3P 132911-19-4P 683262-78-4P  
683262-88-6P  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(organometallic complexes for luminescent dyes as dopants for emitter layers for organic electroluminescent devices)
- IT 62-53-3, Aniline, reactions 81-84-5, 1,8-Naphthalenedicarboxylic acid anhydride 95-54-5, o-Phenylenediamine, reactions 1677-46-9, 4-Hydroxy-1-methyl-2-quinolinone 15435-71-9, Acetylacetone sodium salt, reactions 57665-05-1, Sodium picolinate 337526-85-9  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(organometallic complexes for luminescent dyes as dopants for emitter layers for organic electroluminescent devices)

L41 ANSWER 17 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:88317 HCAPLUS

DOCUMENT NUMBER: 140:171926

TITLE: Organic light emitting materials and devices

INVENTOR(S): Ma, Bin; Knowles, David B.; Brown, Cory S.; Murphy, Drew; Thompson, Mark E.

PATENT ASSIGNEE(S): Universal Display Corporation, USA; The University of Southern California

SOURCE: U.S., 17 pp.  
CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

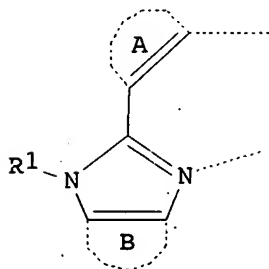
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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 US 6687266 B1 20040203 US 2002-291338 2002  
 1108  
 WO 2004045002 A1 20040527 WO 2003-US35535 2003  
 1107  
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,  
 CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG,  
 ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
 KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
 MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,  
 RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT,  
 TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW,  
 AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY,  
 CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC,  
 NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,  
 GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2002-291338 A 2002  
 1108

OTHER SOURCE(S): MARPAT 140:171926  
 GI



I

AB Organic light-emitting devices comprising an anode; a cathode; and an emissive layer disposed between the anode and the cathode are described in which the emissive layer includes a material having a ligand described by the general formula I, the ligand being attached to a metal having an atomic weight >40 (A = aryl and heteroaryl rings; B = an aryl ring; and R1 = H or any substituent). The emissive materials may be incorporated into polymers or may be used to dope host materials. The emissive materials are also claimed.

IT 654066-54-3 654066-55-4 654066-56-5  
 654066-57-6 654066-58-7 654066-59-8  
 654066-60-1 654066-61-2 654066-63-4  
 654066-64-5 654066-65-6 654066-66-7  
 654066-67-8 654066-68-9 654066-69-0  
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654066-73-6 654066-74-7 654066-76-9

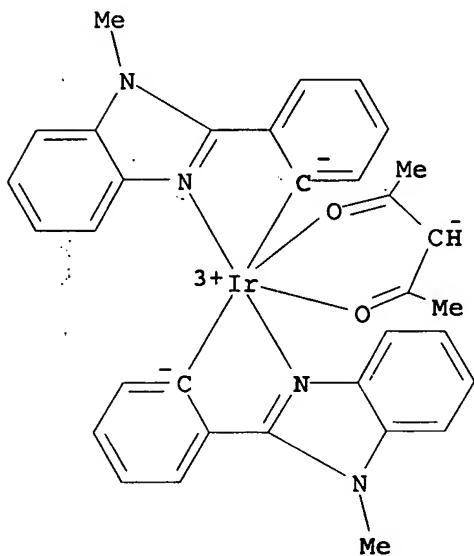
654066-77-0 654066-78-1 654066-79-2

654066-80-5 654066-81-6 654066-82-7

RL: DEV (Device component use); USES (Uses)  
 (metalorg. complex light-emitting materials  
 and devices)

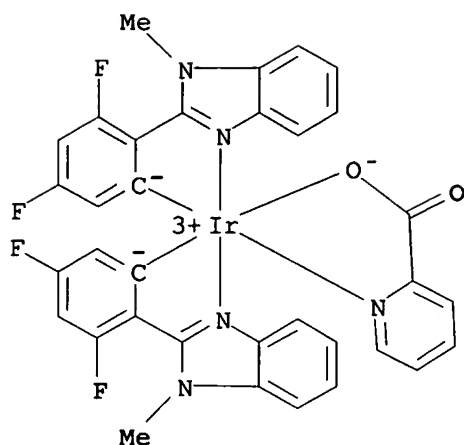
RN 654066-54-3 HCAPLUS

CN Iridium, bis[2-(1-methyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C](2,4-pentanedionato- $\kappa$ O, $\kappa$ O')- (9CI) (CA INDEX  
 NAME)

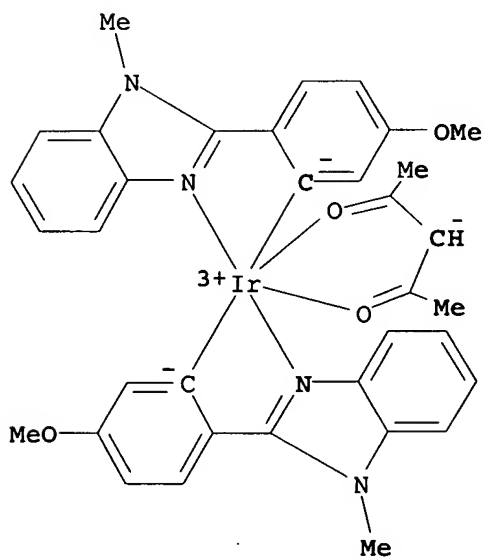


RN 654066-55-4 HCAPLUS

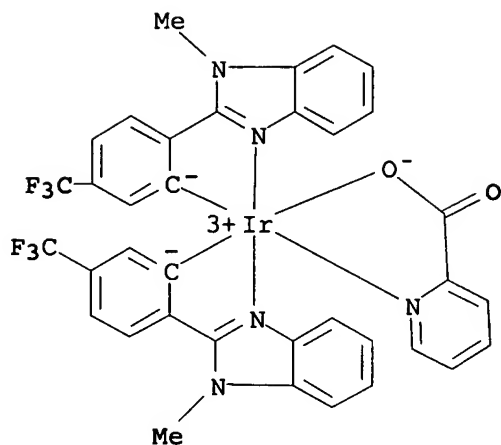
CN Iridium, bis[3,5-difluoro-2-(1-methyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C](2-pyridinecarboxylato- $\kappa$ N1, $\kappa$ O2)- (9CI) (CA INDEX NAME)



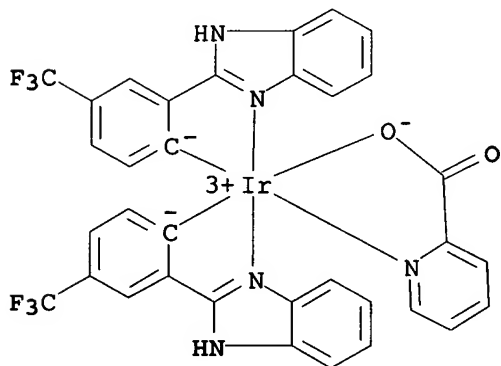
RN 654066-56-5 HCAPLUS  
 CN Iridium, bis[5-methoxy-2-(1-methyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C] (2,4-pentanedionato- $\kappa$ O, $\kappa$ O') - (9CI) (CA INDEX NAME)



RN 654066-57-6 HCAPLUS  
 CN Iridium, bis[2-(1-methyl-1H-benzimidazol-2-yl- $\kappa$ N3)-5-(trifluoromethyl)phenyl- $\kappa$ C] (2-pyridinecarboxylato- $\kappa$ N1, $\kappa$ O2) - (9CI) (CA INDEX NAME)

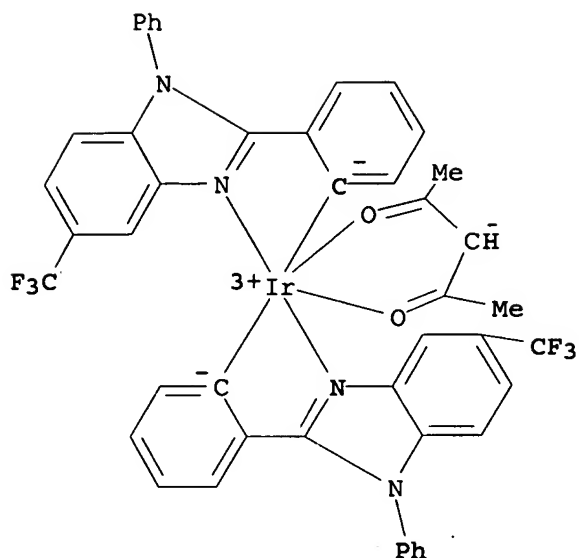


RN 654066-58-7 HCAPLUS  
 CN Iridium, bis[2-(1H-benzimidazol-2-yl-κN3)-4-(trifluoromethyl)phenyl-κC] (2-pyridinecarboxylato-κN1,κO2)- (9CI) (CA INDEX NAME)



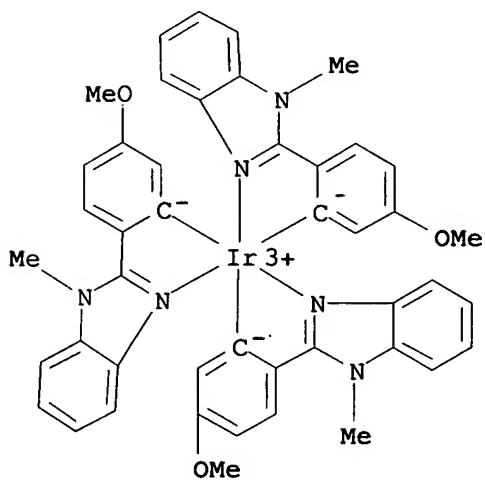
RN 654066-59-8 HCAPLUS  
 CN Iridium, (2,4-pentanedionato-κO,κO')bis[2-[1-phenyl-5-(trifluoromethyl)-1H-benzimidazol-2-yl-κN3]phenyl-κC]- (9CI) (CA INDEX NAME)





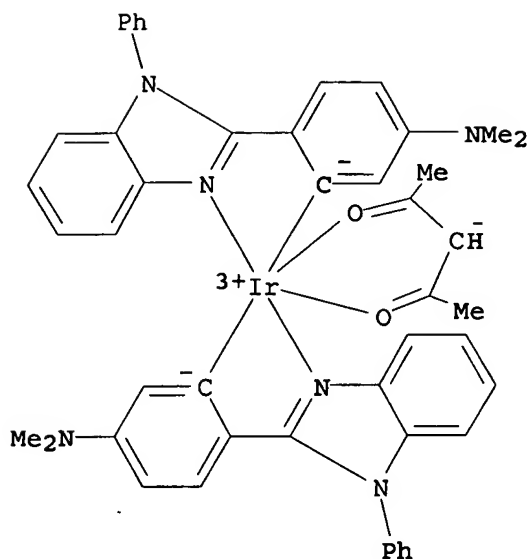
RN 654066-60-1 HCAPLUS

CN Iridium, tris[5-methoxy-2-(1-methyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C] - (9CI) (CA INDEX NAME)



RN 654066-61-2 HCAPLUS

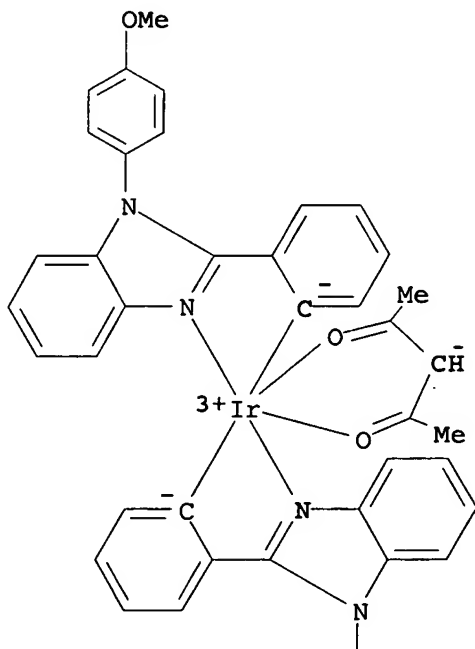
CN Iridium, bis[5-(dimethylamino)-2-(1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C] (2,4-pentanedionato- $\kappa$ O, $\kappa$ O') - (9CI) (CA INDEX NAME)



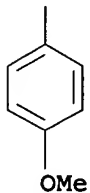
RN 654066-63-4 HCAPLUS

CN Iridium, bis[2-[1-(4-methoxyphenyl)-1H-benzimidazol-2-yl- $\kappa$ N3]phenyl- $\kappa$ C] (2,4-pentanedionato- $\kappa$ O, $\kappa$ O') - (9CI) (CA INDEX NAME)

PAGE 1-A

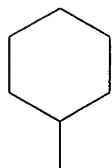


PAGE 2-A



RN 654066-64-5 HCAPLUS  
CN Iridium, (2,4-pentanedionato-κO,κO')bis[3,4,6-trichloro-2-(1-cyclohexyl-5-methoxy-1H-benzimidazol-2-yl-κN3)phenyl-κC] - (9CI) (CA INDEX NAME)

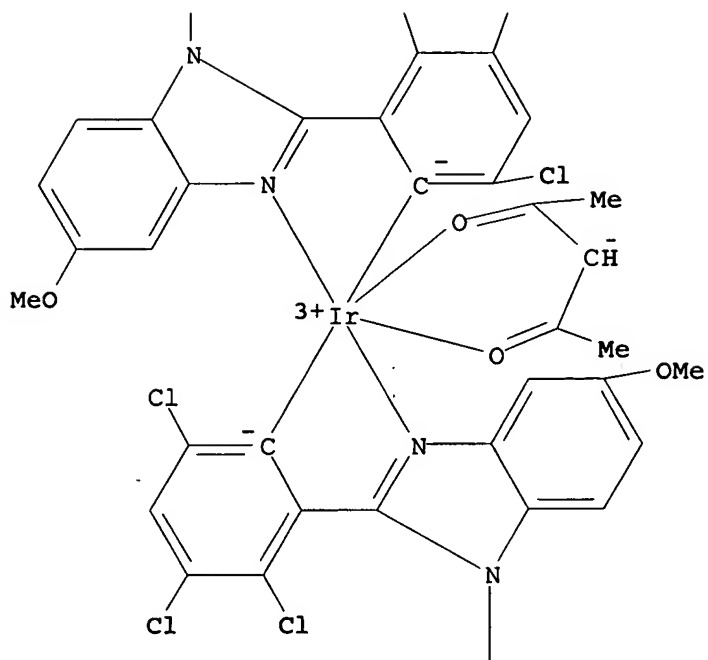
PAGE 1-A



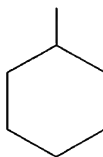
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Cl

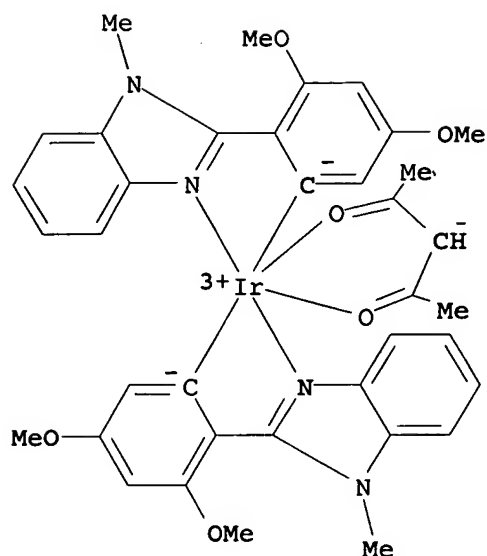
PAGE 2-A



PAGE 3-A

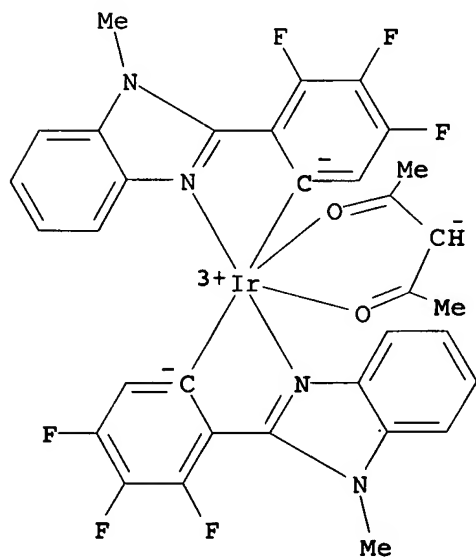


RN 654066-65-6 HCAPLUS  
 CN Iridium, bis[3,5-dimethoxy-2-(1-methyl-1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C] (2,4-pentanedionato- $\kappa$ O, $\kappa$ O') -  
 (9CI) (CA INDEX NAME)



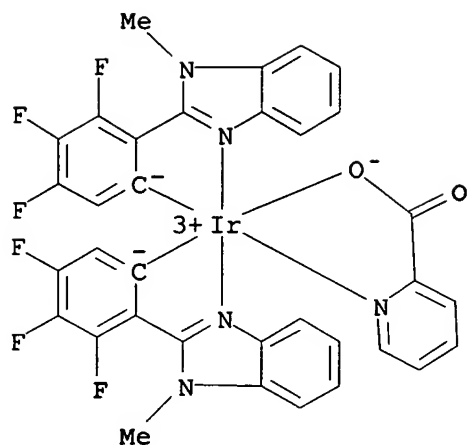
RN 654066-66-7 HCAPLUS

CN Iridium, (2,4-pentanedionato-κO,κO')bis[3,4,5-trifluoro-2-(1-methyl-1H-benzimidazol-2-yl-κN3)phenyl-κC] - (9CI) (CA INDEX NAME)

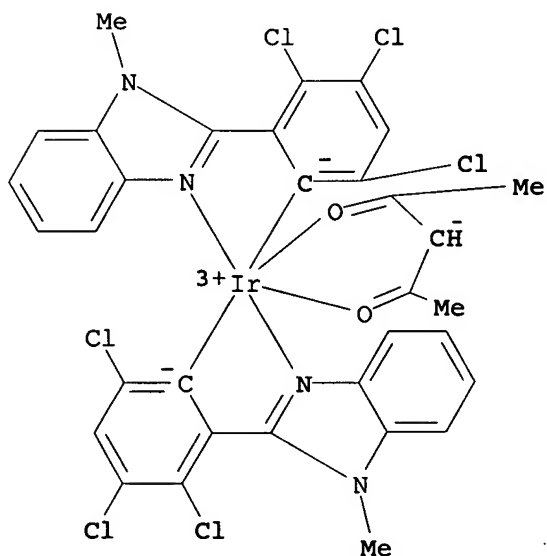


RN 654066-67-8 HCAPLUS

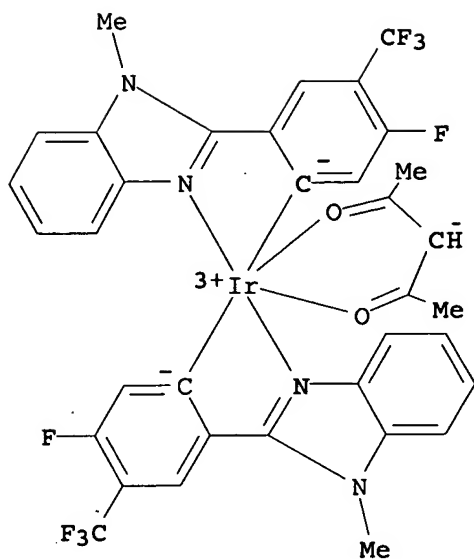
CN Iridium, (2-pyridinecarboxylato-κN1,κO2)bis[3,4,5-trifluoro-2-(1-methyl-1H-benzimidazol-2-yl-κN3)phenyl-κC] - (9CI) (CA INDEX NAME)



RN 654066-68-9 HCAPLUS  
 CN Iridium, (2,4-pentanedionato-κO,κO')bis[3,4,6-trichloro-2-(1-methyl-1H-benzimidazol-2-yl-κN3)phenyl-κC] - (9CI) (CA INDEX NAME)

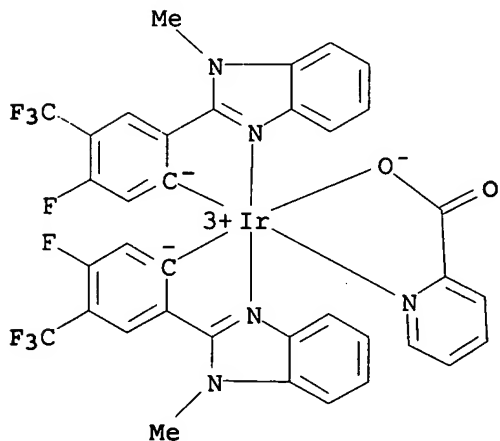


RN 654066-69-0 HCAPLUS  
 CN Iridium, bis[5-fluoro-2-(1-methyl-1H-benzimidazol-2-yl-κN3)-4-(trifluoromethyl)phenyl-κC] (2,4-pentanedionato-κO,κO') - (9CI) (CA INDEX NAME)



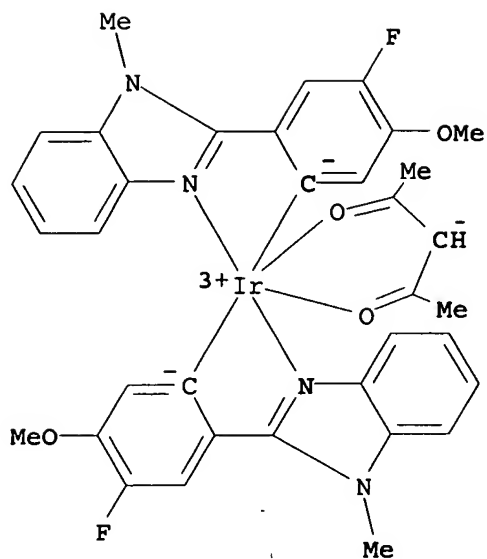
RN 654066-70-3 HCAPLUS

CN Iridium, bis[5-fluoro-2-(1-methyl-1H-benzimidazol-2-yl-κN3)-4-(trifluoromethyl)phenyl-κC] (2-pyridinecarboxylato-κN1,κO2) - (9CI) (CA INDEX NAME)



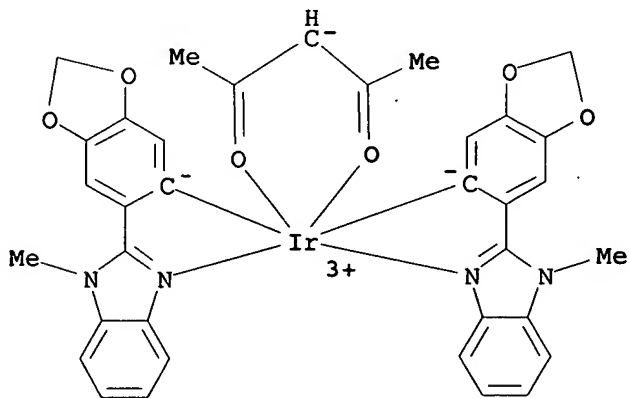
RN 654066-71-4 HCAPLUS

CN Iridium, bis[4-fluoro-5-methoxy-2-(1-methyl-1H-benzimidazol-2-yl-κN3)phenyl-κC] (2,4-pentanedionato-κO,κO') - (9CI) (CA INDEX NAME)



RN 654066-72-5 HCAPLUS

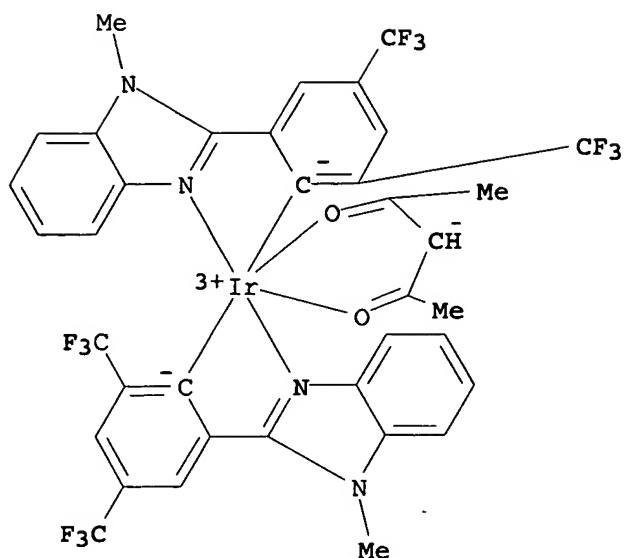
CN Iridium, bis[6-(1-methyl-1H-benzimidazol-2-yl- $\kappa$ N3)-1,3-benzodioxol-5-yl- $\kappa$ C] (2,4-pentanedionato- $\kappa$ O, $\kappa$ O') - (9CI) (CA INDEX NAME)



RN 654066-73-6 HCAPLUS

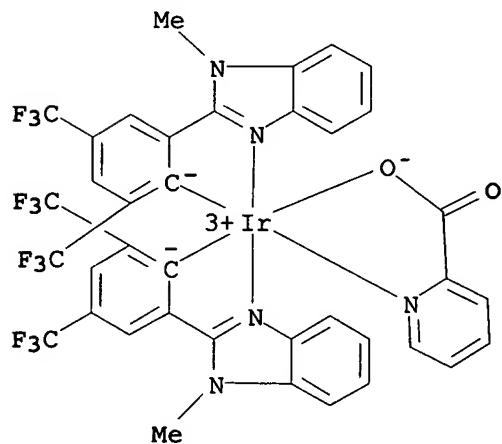
CN Iridium, bis[2-(1-methyl-1H-benzimidazol-2-yl- $\kappa$ N3)-4,6-bis(trifluoromethyl)phenyl- $\kappa$ C] (2,4-pentanedionato- $\kappa$ O, $\kappa$ O') - (9CI) (CA INDEX NAME)





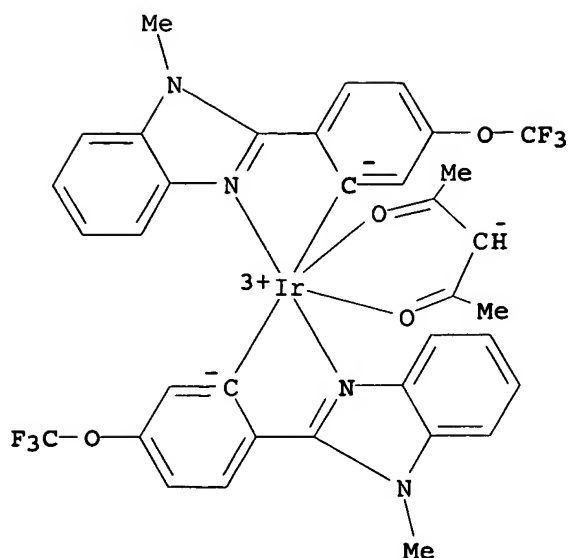
RN 654066-74-7 HCAPLUS

CN Iridium, bis[2-(1-methyl-1H-benzimidazol-2-yl-κN3)-4,6-bis(trifluoromethyl)phenyl-κC] (2-pyridinecarboxylato-κN1,κO2)- (9CI) (CA INDEX NAME)



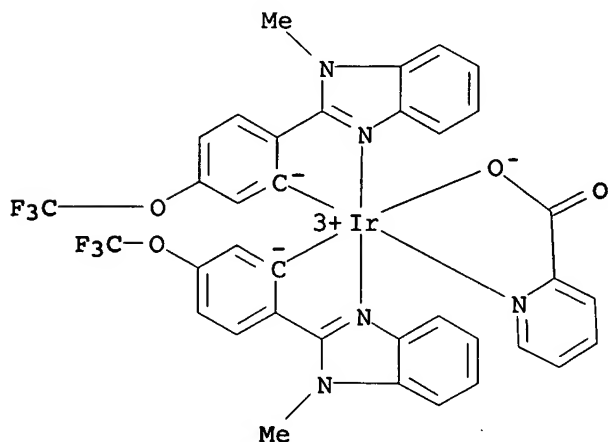
RN 654066-76-9 HCAPLUS

CN Iridium, bis[2-(1-methyl-1H-benzimidazol-2-yl-κN3)-5-(trifluoromethoxy)phenyl-κC] (2,4-pentanedionato-κO,κO')- (9CI) (CA INDEX NAME)



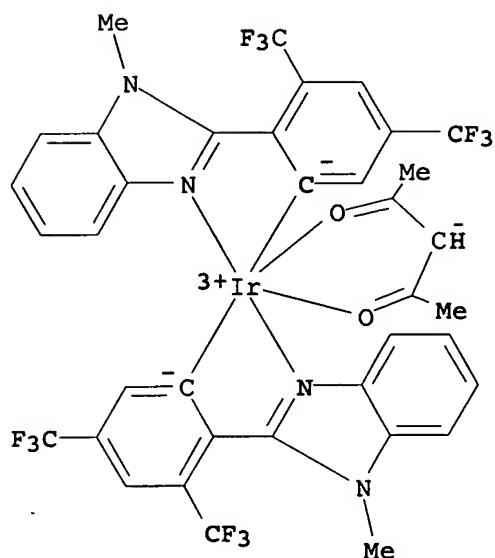
RN 654066-77-0 HCAPLUS

CN Iridium, bis [2-(1-methyl-1H-benzimidazol-2-yl-κN3)-5-(trifluoromethoxy)phenyl-κC] (2-pyridinecarboxylato-κN1,κO2)- (9CI) (CA INDEX NAME)



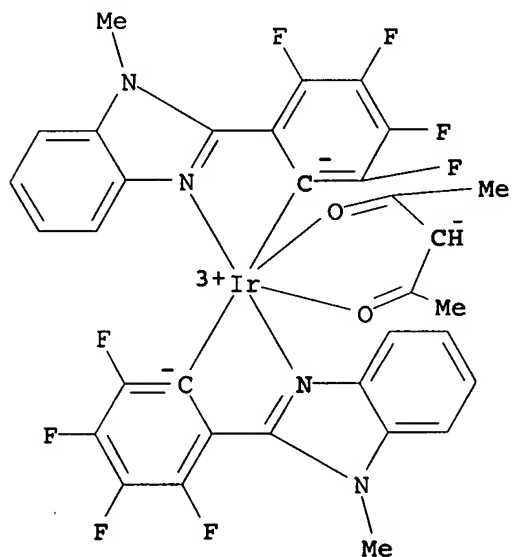
RN 654066-78-1 HCAPLUS

CN Iridium, bis [2-(1-methyl-1H-benzimidazol-2-yl-κN3)-3,5-bis(trifluoromethyl)phenyl-κC] (2,4-pentanedionato-κO,κO')- (9CI) (CA INDEX NAME)



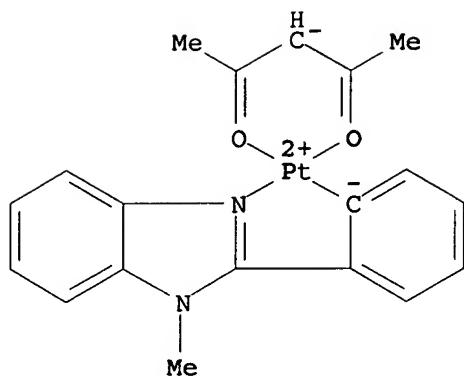
RN 654066-79-2 HCAPLUS

CN Iridium, (2,4-pentanedionato-κO,κO')bis[2,3,4,5-tetrafluoro-6-(1-methyl-1H-benzimidazol-2-yl-κN3)phenyl-κC] - (9CI) (CA INDEX NAME)

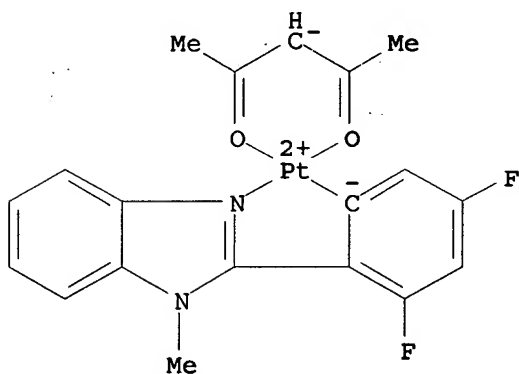


RN 654066-80-5 HCAPLUS

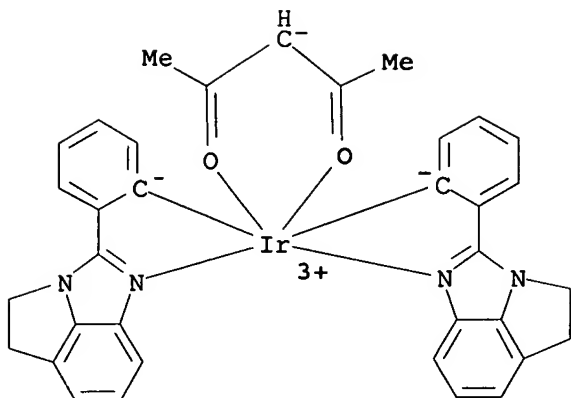
CN Platinum, [2-(1-methyl-1H-benzimidazol-2-yl-κN3)phenyl-κC](2,4-pentanedionato-κO,κO')-, (SP-4-4) - (9CI)  
(CA INDEX NAME)



RN 654066-81-6 HCAPLUS  
 CN Platinum, [3,5-difluoro-2-(1-methyl-1H-benzimidazol-2-yl-  
 κN3)phenyl-κC] (2,4-pentanedionato-κO,κO') -  
 , (SP-4-4) - (9CI) (CA INDEX NAME)



RN 654066-82-7 HCAPLUS  
 CN Iridium, bis[2-(4,5-dihydropyrrolo[1,2,3-cd]benzimidazol-2-yl-  
 κN1)phenyl-κC] (2,4-pentanedionato-κO,κO') -  
 (9CI) (CA INDEX NAME)



IC ICM H01S003-30

INCL 372007000; 372039000; 257141000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76, 78

ST metalorg complex light emitting material  
electroluminescent device

IT Luminescent substances  
(electroluminescent; metalorg. complex light  
-emitting materials and devices)

IT Electroluminescent devices  
(organic; metalorg. complex light-emitting  
materials and devices)

IT 7439-92-1D, Lead, compds. with organic ligands 7440-04-2D, Osmium,  
compds. with organic ligands 7440-05-3D, Palladium, compds. with  
organic ligands 7440-15-5D, Rhenium, compds. with organic ligands  
7440-16-6D, Rhodium, compds. with organic ligands 7440-18-8D,  
Ruthenium, compds. with organic ligands 7440-22-4D, Silver, compds.  
with organic ligands 7440-28-0D, Thallium, compds. with organic  
ligands 7440-31-5D, Tin, compds. with organic ligands 7440-36-0D,  
Antimony, compds. with organic ligands 7440-57-5D, Gold, compds.  
with organic ligands 7440-69-9D, Bismuth, compds. with organic ligands  
7440-74-6D, Indium, compds. with organic ligands 13494-80-9D,  
Tellurium, compds. with organic ligands 654066-54-3  
654066-55-4 654066-56-5 654066-57-6  
654066-58-7 654066-59-8 654066-60-1  
654066-61-2 654066-62-3 654066-63-4  
654066-64-5 654066-65-6 654066-66-7  
654066-67-8 654066-68-9 654066-69-0  
654066-70-3 654066-71-4 654066-72-5  
654066-73-6 654066-74-7 654066-76-9  
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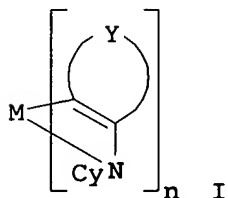
RL: DEV (Device component use); USES (Uses)  
(metalorg. complex light-emitting materials  
and devices)

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L41 ANSWER 18 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2002:540162 HCAPLUS  
 DOCUMENT NUMBER: 137:116745  
 TITLE: Metal coordination compound,  
 'luminescence device and display  
 apparatus  
 INVENTOR(S): Takiguchi, Takao; Okada, Shinjiro; Tsuboyama,  
 Akira; Noguchi, Koji; Moriyama, Takashi;  
 Kamatani, Jun; Furugori, Manabu  
 PATENT ASSIGNEE(S): Canon Kabushiki Kaisha, Japan  
 SOURCE: U.S. Pat. Appl. Publ., 16 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002094453	A1	20020718	US 2001-995610	2001 1129
US 6733905	B2	20040511		
JP 2002226495	A2	20020814	JP 2001-344550	2001 1109
PRIORITY APPLN. INFO.:			JP 2000-362150	A 2000 1129
			JP 2001-344550	A 2001 1109

OTHER SOURCE(S): MARPAT 137:116745  
 GI



AB Metal coordination compds. suitable as an organic material for a  
 luminescent device are described by the general formula I  
 (M = Ir, Pt, Rh, or Pd; n = 2 or 3; Y = C2-6 alkylene group  
 optionally with ≥1 nonadjacent methylene groups which can  
 be replaced with -O-, -S- or -CO- and with hydrogen atoms which  
 can be replaced by (un)branched C1-10 (fluoro)alkyl groups; and

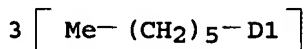
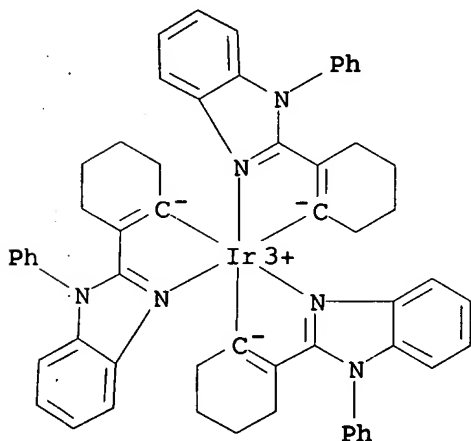
CyN = a cyclic group containing nitrogen atom connected to M which may have substituents selected from halogen atoms; nitro groups; Ph groups; C1-8 trialkylsilyl groups; and (un)branched C1-20 alkyl groups which may include  $\geq 1$  nonadjacent methylene groups which can be replaced by -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH:CH- or -C.tplbond.C- which may include hydrogen atoms which can be replaced with fluorine atoms). Elec. devices, especially **electroluminescent** devices, employing the materials, and displays employing the **electroluminescent** devices, are also described.

IT 442905-23-9

RL: DEV (Device component use); USES (Uses)  
(metal coordination compds. and **electroluminescent** devices and displays using them)

RN 442905-23-9 HCAPLUS

CN Iridium, tris[4(or 5)-hexyl-2-(1-phenyl-1H-benzimidazol-2-yl- $\kappa$ N3)-1-cyclohexen-1-yl- $\kappa$ C]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C07D263-52; C07D213-02; C07D215-00; C07D231-54; C07D233-54;  
C07D235-02; C07D277-60; C09K011-06

INCL 428690000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76, 78

ST metal coordination compd **electroluminescent** device display

IT **Electroluminescent** devices

(displays; metal coordination compds. and **electroluminescent** devices and displays using them)

IT **Luminescent** screens

**Luminescent** substances

(electroluminescent; metal coordination compds. and electroluminescent devices and displays using them)

IT Electroluminescent devices  
(metal coordination compds. and electroluminescent devices and displays using them)

IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 7429-90-5, Aluminum, uses 12615-41-7 12723-72-7 50926-11-9, ITO 123847-85-8,  $\alpha$ -NPD 442852-38-2 442852-39-3 442852-40-6 442852-41-7 442852-42-8 442852-43-9 442852-44-0 442905-22-8 442905-23-9 442905-24-0 442905-25-1  
RL: DEV (Device component use); USES (Uses)  
(metal coordination compds. and electroluminescent devices and displays using them)

IT 58328-31-7, 4,4'-N,N'-Dicarbazolylbiphenyl  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(metal coordination compds. and electroluminescent devices and displays using them)

IT 442852-37-1P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(metal coordination compds. and electroluminescent devices and displays using them)

IT 98-88-4, Benzoyl chloride 123-54-6, Acetylacetone, reactions 694-59-7 936-52-7 10025-83-9, Iridium trichloride  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(metal coordination compds. and electroluminescent devices and displays using them)

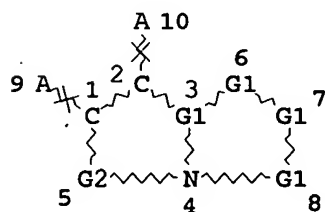
IT 28885-25-8P 56698-38-5P 442686-42-2P 442852-35-9P 442852-36-0P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(metal coordination compds. and electroluminescent devices and displays using them)

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> => d que stat 142

L9 SCR 1918 AND 1840 AND 1993

L12 STR



VAR G1=C/N

VAR G2=IR/RH/OS/PT/PD

NODE ATTRIBUTES:

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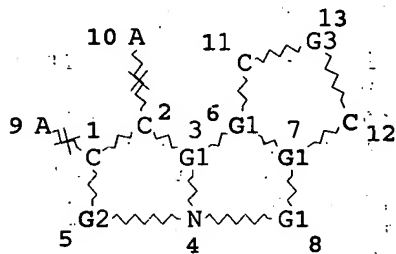


NSPEC IS RC AT 10  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
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 NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE

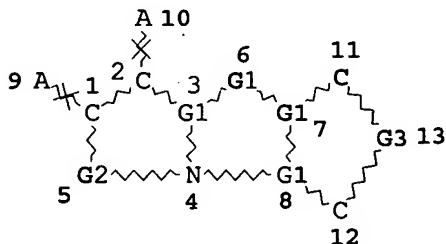
L14 675 SEA FILE=REGISTRY SSS FUL L12 AND L9  
 L16 QUE ABB=ON PLU=ON EL OR E(W)L OR L(W)E(W)D OR OLED O  
 R ELECTROLUM!N? OR ORGANOLUM!N? OR (ELECTRO OR ORGANO O  
 R ORG#) (2A)LUM!N? OR LIGHT?(2A) (EMIT? OR EMISSION? OR S  
 OURCE?)  
 L17 QUE ABB=ON PLU=ON (LUMINES##### OR FLUORES? OR PHO  
 SPHORES?)/BI,AB OR LED/IT OR PHOSPHOR# OR LUMIN?  
 L27 STR



VAR G1=C/N  
 VAR G2=IR/RH/OS/PT/PD  
 REP G3=(1-2) C  
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 NSPEC IS RC AT 10  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 13

STEREO ATTRIBUTES: NONE  
 L28 STR



VAR G1=C/N  
 VAR G2=IR/RH/OS/PT/PD

REP G3=(1-2) C  
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NSPEC IS RC AT 10  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

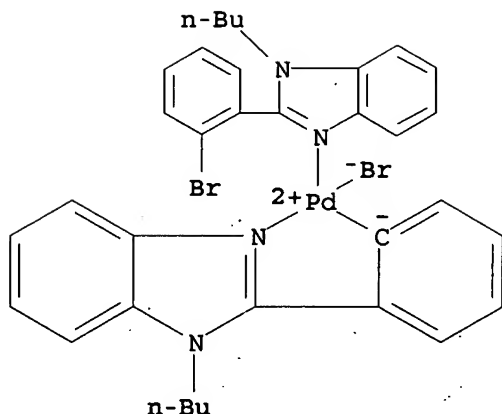
GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 13

STEREO ATTRIBUTES: NONE

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L31 92 SEA FILE=REGISTRY ABB=ON PLU=ON L30 AND 1-6/IR  
L33 28 SEA FILE=HCAPLUS ABB=ON PLU=ON L30  
L34 18 SEA FILE=HCAPLUS ABB=ON PLU=ON L31  
L37 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 AND L16  
L38 16 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 AND L17  
L39 17 SEA FILE=HCAPLUS ABB=ON PLU=ON L37 OR L38  
L40 28 SEA FILE=HCAPLUS ABB=ON PLU=ON L39 OR L33  
L41 18 SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L34  
L42 10 SEA FILE=HCAPLUS ABB=ON PLU=ON L40 NOT L41

=> d l42 1-10 ibib abs hitstr hitind

L42 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2004:1156046 HCAPLUS  
DOCUMENT NUMBER: 142:261237  
TITLE: Palladium-imidazole derivatives as highly  
active catalysts for Heck reactions  
AUTHOR(S): Reddy, K. Rajender; Krishna, G. Gopi  
CORPORATE SOURCE: Inorganic Chemicals Division, Indian Institute  
of Chemical Technology, Hyderabad, 500 007,  
India  
SOURCE: Tetrahedron Letters (2005), 46(4), 661-663  
CODEN: TELEAY; ISSN: 0040-4039  
PUBLISHER: Elsevier B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
OTHER SOURCE(S): CASREACT 142:261237  
AB N-Substituted 2-(2-bromophenyl)benzimidazole derivs. were  
synthesized and used in palladium-catalyzed Heck reactions to give  
coupled products in good yields.  
IT 845783-81-5P  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(preparation of homophenylimidazole derivs. ligand for  
palladium-catalyzed Heck reactions of alkenes with aryl  
halides)  
RN 845783-81-5 HCAPLUS  
CN Palladium, bromo[2-(2-bromophenyl)-1-butyl-1H-benzimidazole-  
κN3][2-(1-butyl-1H-benzimidazol-2-yl-κN3)phenyl-  
κC] - (9CI) (CA INDEX NAME)



CC 25-1 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
Section cross-reference(s): 29, 67

IT 815581-69-2P 845743-09-1P 845743-10-4P 845743-11-5P  
845783-81-5P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(preparation of homophenylimidazole derivs. ligand for  
palladium-catalyzed Heck reactions of alkenes with aryl  
halides)

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L42 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:164972 HCAPLUS

DOCUMENT NUMBER: 134:367019

TITLE: Molecular Tricorns: Self-Assembly of  
Trinuclear Palladium(II) Complexes

AUTHOR(S): Carina, Riccardo F.; Williams, Alan F.;  
Bernardinelli, Gerald

CORPORATE SOURCE: Department of Inorganic Analytical and Applied  
Chemistry, University of Geneva, Geneva, CH  
1211, Switz.

SOURCE: Inorganic Chemistry (2001), 40(8), 1826-1832  
CODEN: INOCAJ; ISSN: 0020-1669

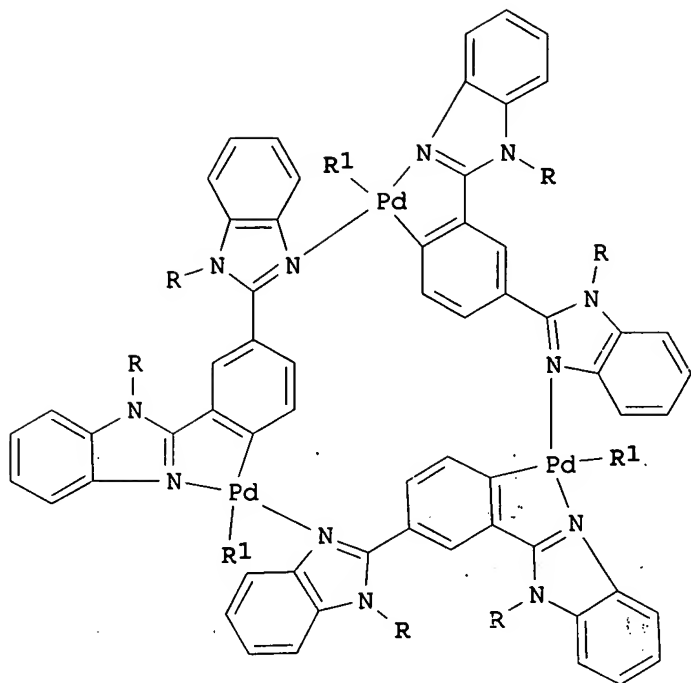
PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 134:367019

GI



I

AB Cyclometalation of the ligand 1,3-bis(1-alkylbenzimidazol-2-yl)benzene (1) with Pd carboxylates leads to trimeric  $[\text{Pd}_3(\text{ligand})_3(\text{carboxylate})_3]$  (3; shown as I (R/R1 = Me/Et, Et/Me)). Studies in solution show that the trinuclear core is stable but that the carboxylates are labile, undergoing intra- and intermol. exchange on an NMR time scale. The structural analog of 1, 2,6-bis(1-alkylbenzimidazol-2-yl)pyridine (4), gives only mononuclear  $[\text{Pd}(4)(\text{carboxylate})_2]$ , characterized by x-ray diffraction. This complex forms a trimer if one carboxylate is labilized by the addition of strong acid; the resulting trinuclear species is readily cleaved by nucleophiles but can include weakly basic anions within its cavity.

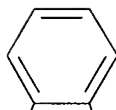
IT 148602-53-3

RL: RCT (Reactant); RACT (Reactant or reagent)  
(coordinative substitution and exchange reactions of)

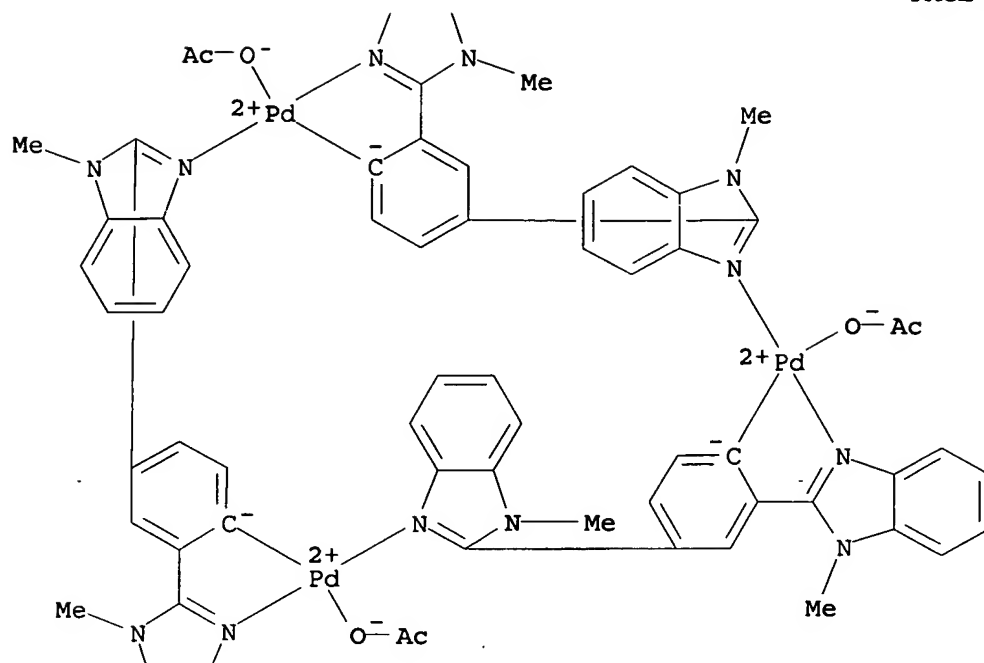
RN 148602-53-3 HCAPLUS

CN Palladium, tris(acetato- $\kappa\text{O}$ )tris[ $\mu$ -[2,4-bis(1-methyl-1H-benzimidazol-2-yl- $\kappa\text{N3}$ )phenyl- $\kappa\text{C}$ ]]tri-, stereoisomer (9CI) (CA INDEX NAME)

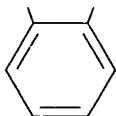
PAGE 1-A



PAGE 2-A

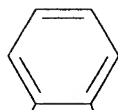


PAGE 3-A

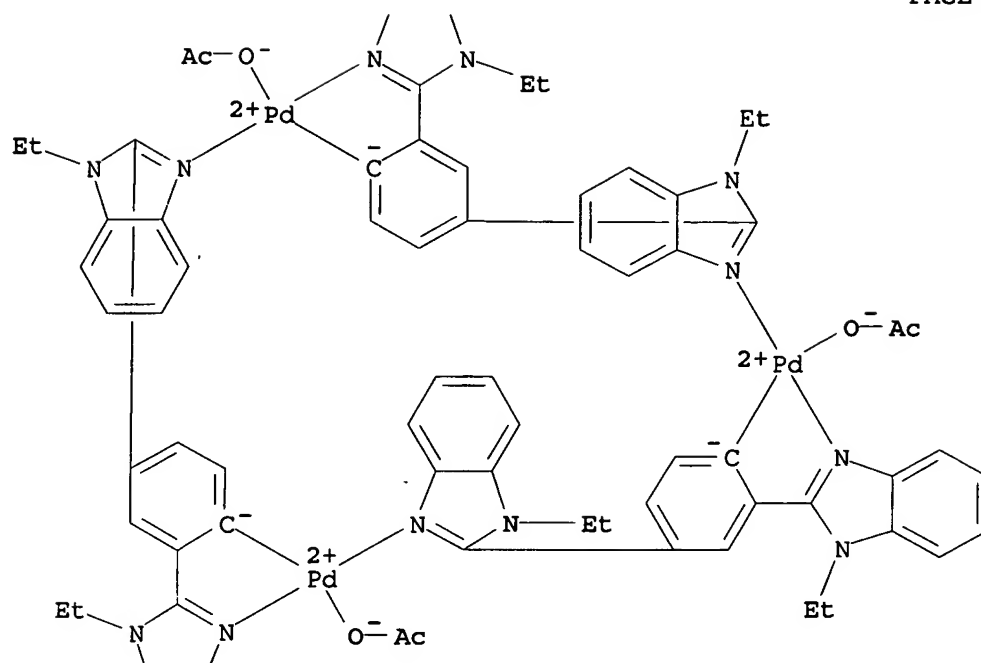


IT 201870-53-3P 340155-26-2P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (preparation and intramol./intermol. exchange reactions of)  
 RN 201870-53-3 HCAPLUS  
 CN Palladium, tris(acetato-κO)tris[μ-[2,4-bis(1-ethyl-1H-  
 benzimidazol-2-yl-κN3)phenyl-κC]]tri-, cyclo,  
 stereoisomer (9CI) (CA INDEX NAME)

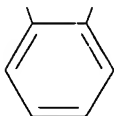
PAGE 1-A



PAGE 2-A



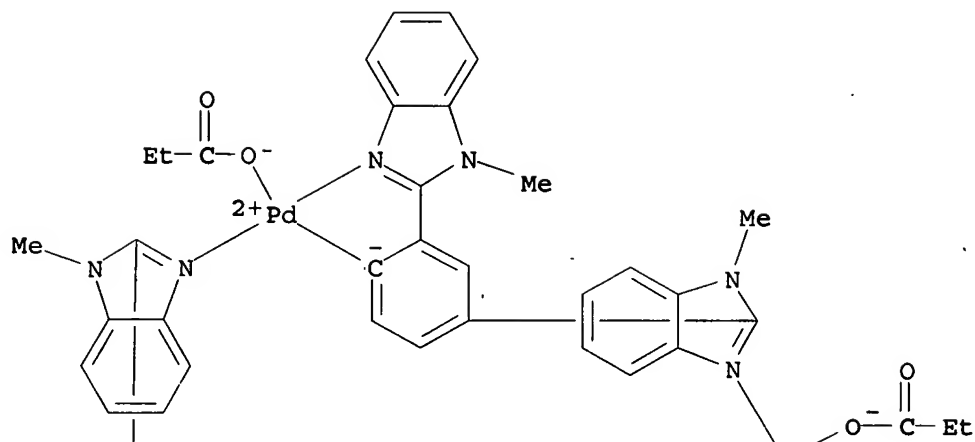
PAGE 3-A



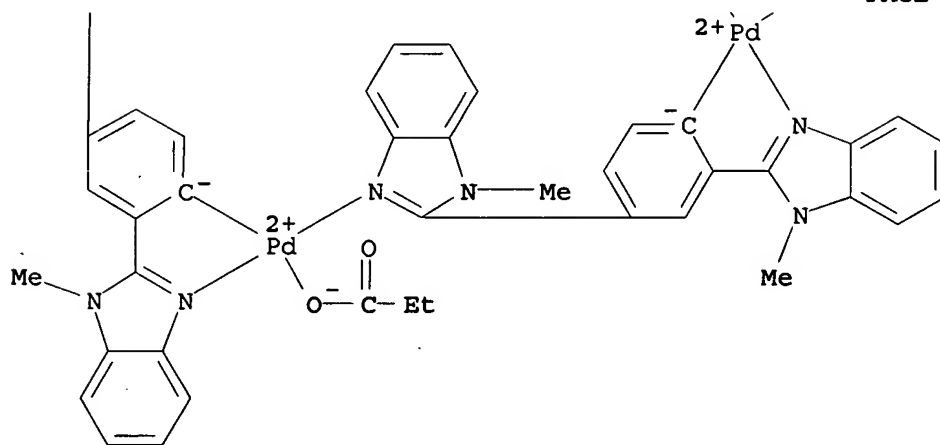
RN 340155-26-2 HCAPLUS  
 CN Palladium, tris[μ-[2,4-bis(1-methyl-1H-benzimidazol-2-yl)-κN3)phenyl-κC]]tris(propanoato-κO)tri-, cyclo,  
 stereoisomer (9CI) (CA INDEX NAME)



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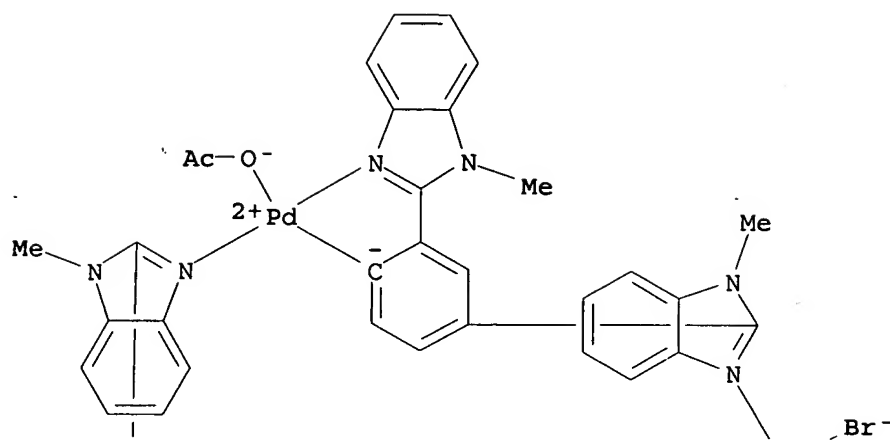
PAGE 2-A



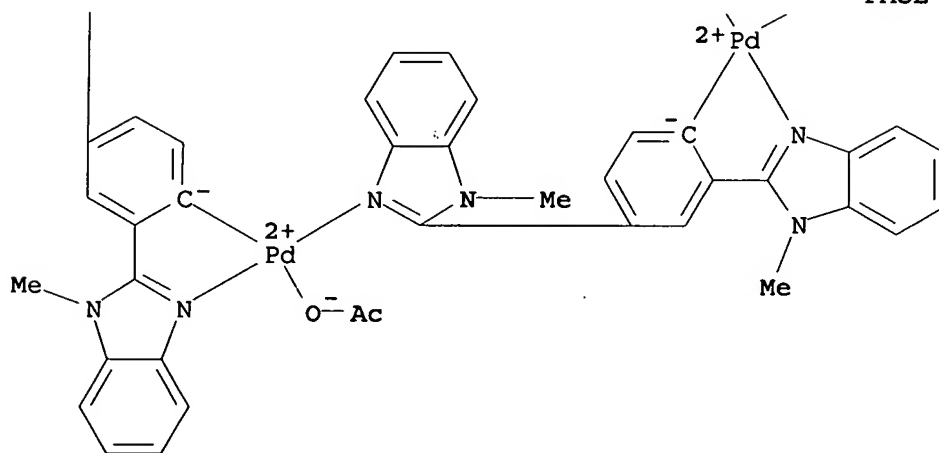
IT 340155-37-5P 340155-39-7P 340155-41-1P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)  
 RN 340155-37-5 HCAPLUS  
 CN Palladium, bis(acetato-κO)tris[μ-[2,4-bis(1-methyl-1H-  
 benzimidazol-2-yl-κN3)phenyl-κC]]bromotri-, cyclo,

stereoisomer (9CI) (CA INDEX NAME)

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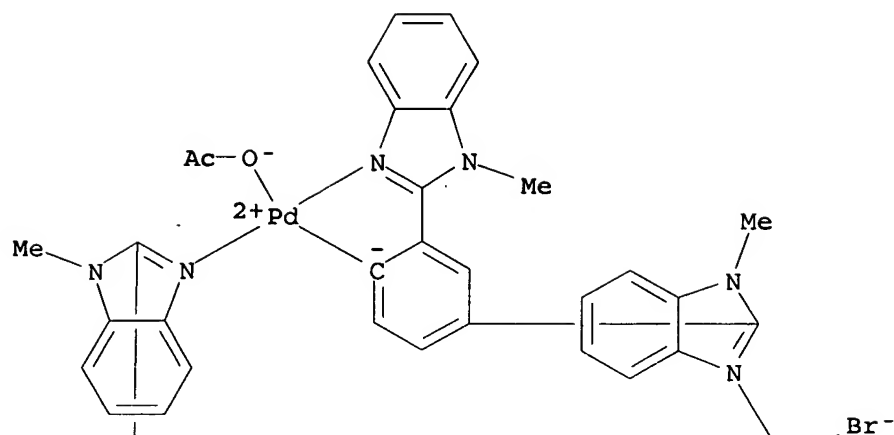


PAGE 2-A

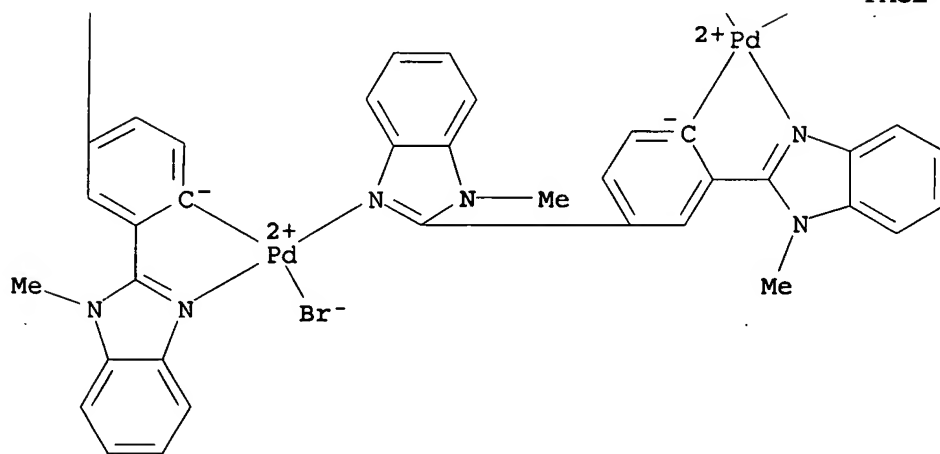


RN 340155-39-7 HCAPLUS  
 CN Palladium, (acetato-κO)tris[μ-[2,4-bis(1-methyl-1H-benzimidazol-2-yl-κN3)phenyl-κC]]dibromotri-, cyclo, stereoisomer (9CI) (CA INDEX NAME)

PAGE 1-A

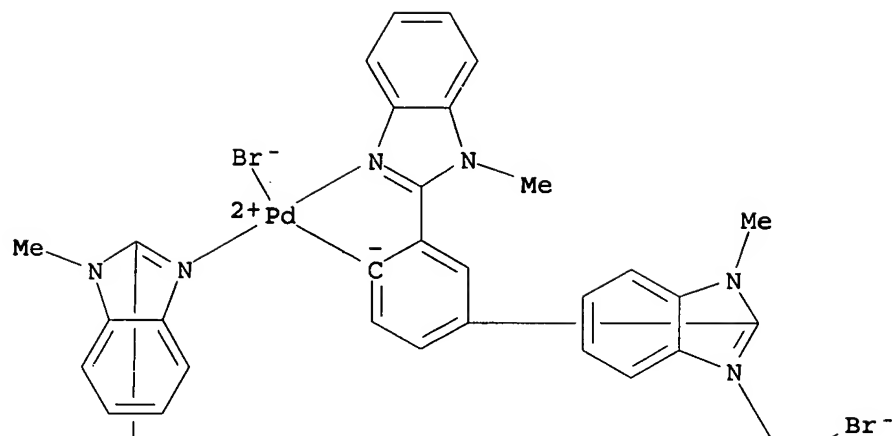


PAGE 2-A

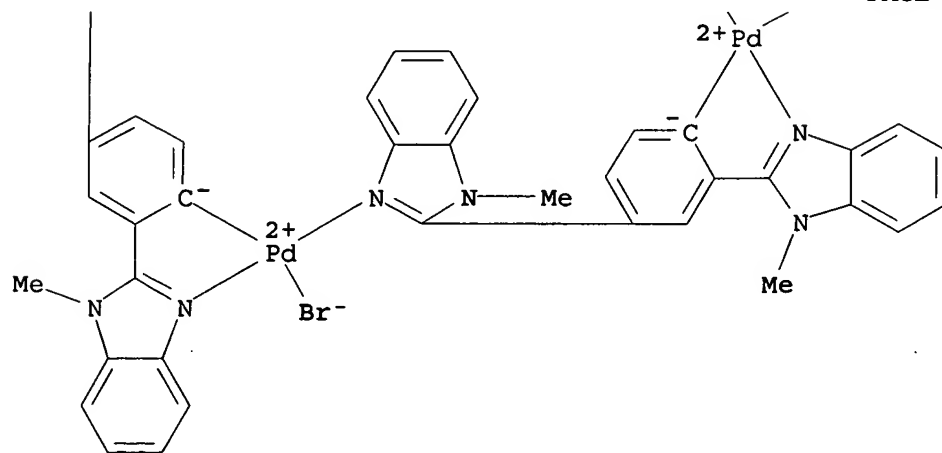


RN 340155-41-1 HCAPLUS  
 CN Palladium, tris[μ-[2,4-bis(1-methyl-1H-benzimidazol-2-yl-κN3)phenyl-κC]]tribromotri-, cyclo, stereoisomer (9CI)  
 (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



CC 29-13 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 75, 78  
 IT 148602-53-3  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (coordinative substitution and exchange reactions of)  
 IT 201870-53-3P 340155-26-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)  
(preparation and intramol./intermol. exchange reactions of)

IT 340155-33-1P 340155-35-3P 340155-37-5P

340155-39-7P 340155-40-0P 340155-41-1P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L42 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:249081 HCAPLUS

DOCUMENT NUMBER: 132:347331

TITLE: Unidentate coordination of 2,2'-bipyridine and  
1,10-phenanthroline in a cyclometallated  
rhodium(III) complex. Evidence from 1H and 13C  
NMR spectra

AUTHOR(S): Naganagowda, G. A.; Ramanathan, K. V.;  
Gayathri, V.; Gowda, N. M. Nanje

CORPORATE SOURCE: Sophisticated Instruments Facility, Indian  
Institute of Science, Bangalore, 560 012,  
India

SOURCE: Magnetic Resonance in Chemistry (2000), 38(4),  
223-228

CODEN: MRCHEG; ISSN: 0749-1581

PUBLISHER: John Wiley & Sons Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The binuclear cyclometallated complex  $[\text{RhCl}(\mu\text{-Cl})(\text{bBz1H2bz})]_2$   
[bBz1H2bzH = 1,3-bis(benzimidazolyl)benzene] undergoes a dichloro  
bridge cleavage reaction with 2,2'-bipyridine (bipy) or  
1,10-phenanthroline (phen) in the presence of perchlorate to yield  
a mononuclear complex of the type  $\text{RhCl}(\text{OClO}_3)(\text{bBz1H2bz})(\text{N-N})$  (N-N  
= bipy or phen) [Gayathri, V.; Leelamani, E.G.; Godwa, N.M.N.;  
Reddi, G.K.N. Polyhedron (1999) 18, 2351]. Surprisingly, the  
N-heterocycle, bipy or phen, is neither chelating nor bridging  
bidentate in the complex. Such a monodentate coordination of bipy  
or phen was detected using two-dimensional 1H-1H correlated and  
NOE expts. (DQF-COSY and ROESY), 1H-13C single- and multiple-bond  
correlated two-dimensional NMR expts. (PFG-HSQC and PFG-HMBC) and  
1H,13C spin-lattice relaxation time measurements. The  
non-coordination of the pendant nitrogen of the heterocycle bipy  
or phen is evidenced by the observation of two sets of signals  
together with the presence of interligand NOEs only between the  
coordinated part of the heterocycle and the bisbenzimidazole as  
seen in the corresponding ROESY spectrum. Further, the 1H and 13C  
spin-lattice relaxation times show lower values for the nuclei in  
the coordinated part of the heterocycle, bipy or phen, than for  
the uncoordinated parts, supporting the fact that only one of the  
two nitrogens of the heterocycle has coordinated to the metal and  
thus behaves as monodentate ligand.

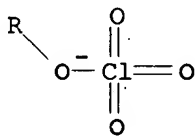
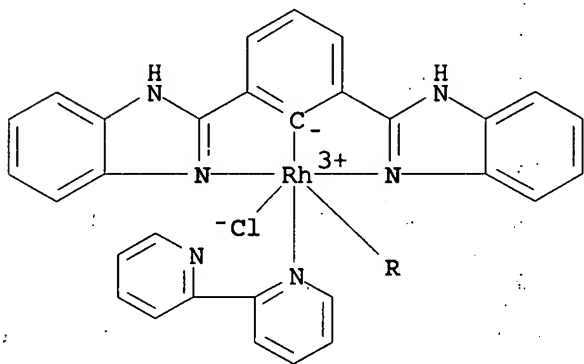
IT 250579-50-1 250579-51-2

RL: PEP (Physical, engineering or chemical process); PRP  
(Properties); PROC (Process)

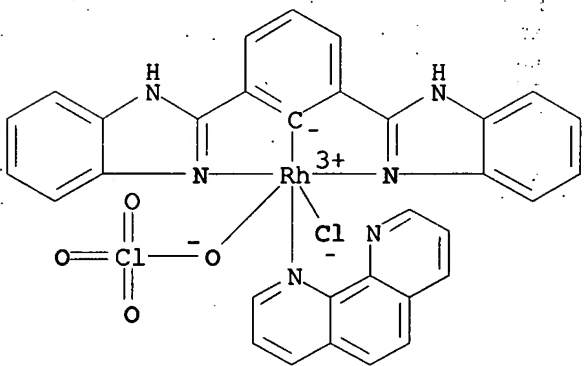
(NMR spectroscopy study on unidentate coordination of

2,2'-bipyridine and 1,10-phenanthroline in a cyclometallated rhodium(III) complex)

RN 250579-50-1 HCAPLUS  
 CN Rhodium, (2,2'-bipyridine- $\kappa$ N1) [2,6-bis(1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C]chloro(perchlorato- $\kappa$ O) - (9CI) (CA INDEX NAME)



RN 250579-51-2 HCAPLUS  
 CN Rhodium, [2,6-bis(1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C]chloro(perchlorato- $\kappa$ O) (1,10-phenanthroline- $\kappa$ N1) - (9CI) (CA INDEX NAME)



CC 22-10 (Physical Organic Chemistry)  
 Section cross-reference(s): 68  
 IT 250579-50-1 250579-51-2  
 RL: PEP (Physical, engineering or chemical process); PRP

(Properties); PROC (Process)

(NMR spectroscopy study on unidentate coordination of  
2,2'-bipyridine and 1,10-phenanthroline in a cyclometallated  
rhodium(III) complex)

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L42 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:632769 HCAPLUS

DOCUMENT NUMBER: 131:351445

TITLE: Cyclometallation of bis-benzimidazole  
derivatives with rhodium(III) halides

AUTHOR(S): Gayathri, V.; Leelamani, E. G.; Gowda, N. M.  
N.; Reddy, G. K. N.

CORPORATE SOURCE: Department of Chemistry, Bangalore University,  
Bangalore, 560001, India

SOURCE: Polyhedron (1999), 18(18), 2351-2360  
CODEN: PLYHDE; ISSN: 0277-5387

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

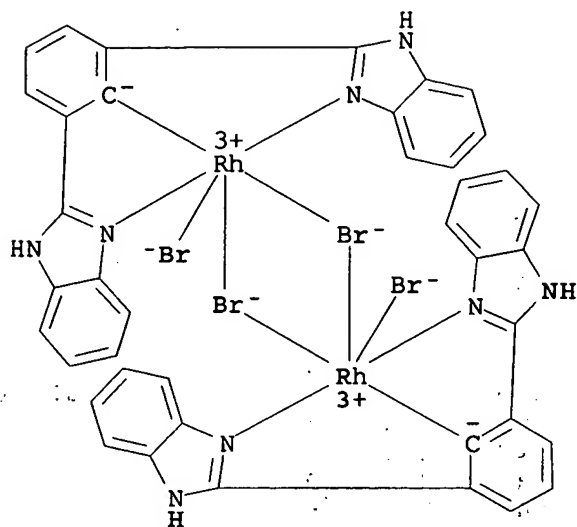
AB Treatment of Rh(III) halides with the N-heterocycles (LH),  
1,3-bis(benzimidazolyl)benzene (bBzlH2bzH; Ia) and its N-Me derivative  
(bBzlMe2bzH; Ib) in MeOH gave halo-bridged binuclear  
cyclometalated products [RhX2L]2 (X = Cl, Br or I). The chloro  
complex undergoes halo-bridge cleavage reactions to yield several  
new mononuclear complexes RhCl2(bBzlH2bz)(AsPh3),  
RhCl(bBzlH2bz)(OC1O3)(L'/N-N) (L' = AsPh3; N-N = 2,2'-bipyridine  
or 1,10-phenanthroline) and the heterocycle bridged binuclear  
complexes [RhCl2(bBzlH2bz)]2(μ-N-N) (N-N = pyrazine or  
4,4'-bipyridine). Passage of CO through [RhCl2(bBzlH2bz)]2 in DMF  
yielded mononuclear carbonyl complex RhCl2(CO)(bBzlH2bz)·2H  
20. Treatment of carbonylated solution of RhCl3 with Ia produced  
non-cyclometalated mononuclear complex [Rh(CO)2(bBzlH2bzH)]Cl.  
The complexes were characterized by 1H, 13C NMR, IR, Far-IR,  
electronic and FAB-mass spectral studies.

IT 250579-43-2P 250579-44-3P 250579-46-5P  
250579-47-6P 250579-48-7P 250579-49-8P  
250579-50-1P 250579-51-2P 250579-52-3P  
250579-53-4P 250579-54-5P 250606-14-5P

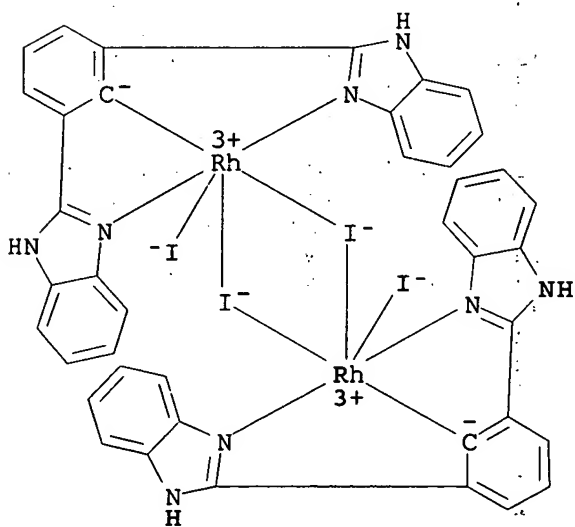
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)

RN 250579-43-2 HCAPLUS

CN Rhodium, bis[2,6-bis(1H-benzimidazol-2-yl-κN3)phenyl-  
κC]di-μ-bromodibromodi- (9CI) (CA INDEX NAME)

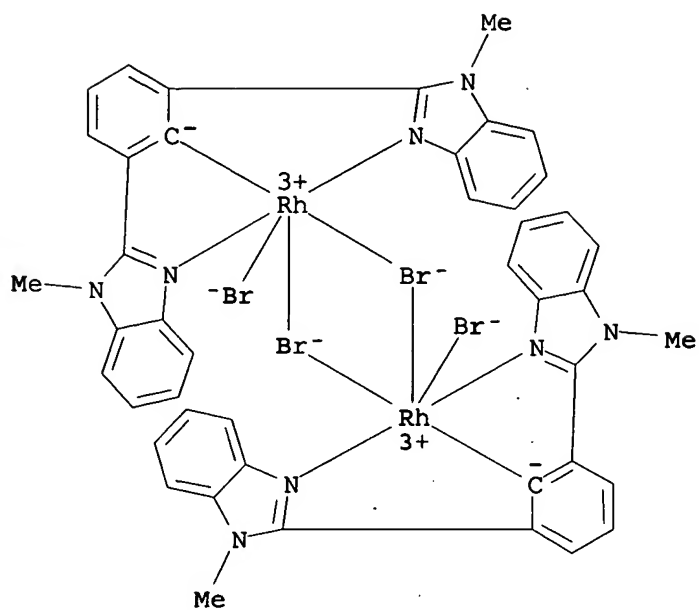


RN 250579-44-3 HCAPLUS  
 CN Rhodium, bis[2,6-bis(1H-benzimidazol-2-yl-κN3)phenyl-κC]di-μ-iododiiiododi- (9CI) (CA INDEX NAME)

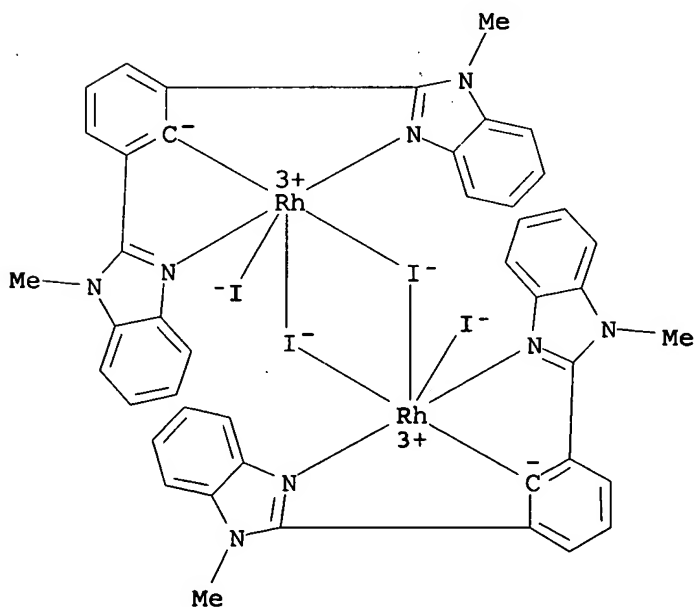


RN 250579-46-5 HCAPLUS  
 CN Rhodium, bis[2,6-bis(1-methyl-1H-benzimidazol-2-yl-κN3)phenyl-κC]di-μ-bromodibromodi- (9CI) (CA INDEX NAME)



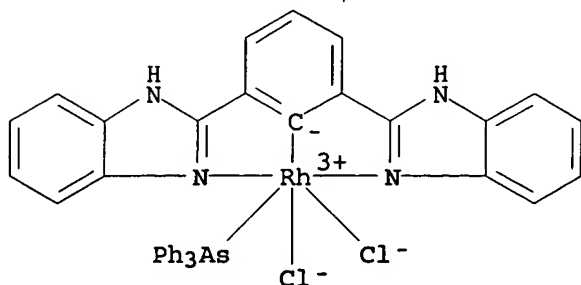


RN 250579-47-6 HCAPLUS  
 CN Rhodium, bis[2,6-bis(1-methyl-1H-benzimidazol-2-yl-  
 κN3)phenyl-κC]di-μ-iododiiiododi- (9CI) (CA INDEX  
 NAME)



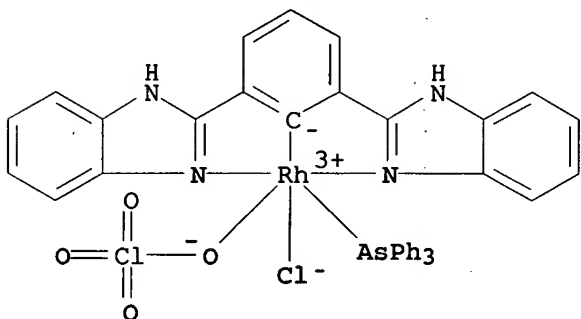
RN 250579-48-7 HCAPLUS

CN Rhodium, [2,6-bis(1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C]dichloro(triphenylarsine)- (9CI) (CA INDEX NAME)



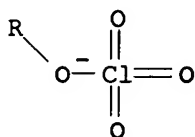
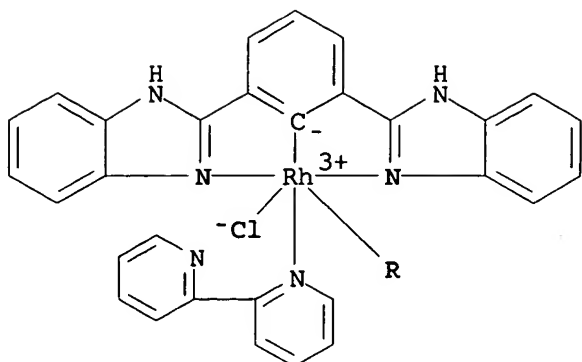
RN 250579-49-8 HCAPLUS

CN Rhodium, [2,6-bis(1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C]chloro(perchlorato- $\kappa$ O)(triphenylarsine)- (9CI) (CA INDEX NAME)

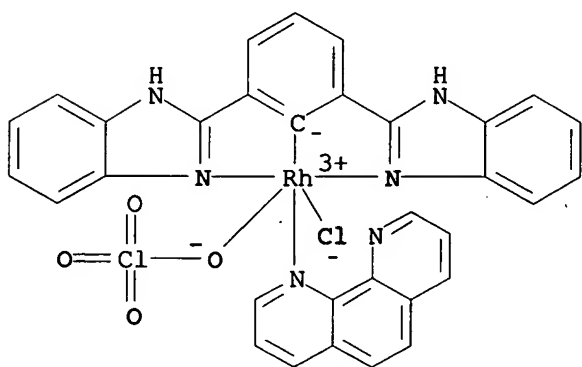


RN 250579-50-1 HCAPLUS

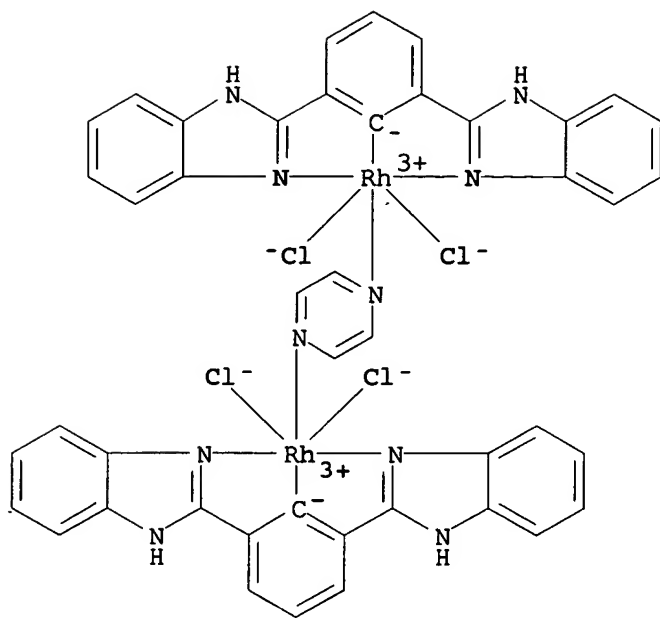
CN Rhodium, (2,2'-bipyridine- $\kappa$ N1)[2,6-bis(1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C]chloro(perchlorato- $\kappa$ O)- (9CI) (CA INDEX NAME)



RN 250579-51-2 HCAPLUS  
 CN Rhodium, [2,6-bis(1H-benzimidazol-2-yl-κN3)phenyl-κC]chloro(perchlorato-κO) (1,10-phenanthroline-κN1) - (9CI) (CA INDEX NAME)

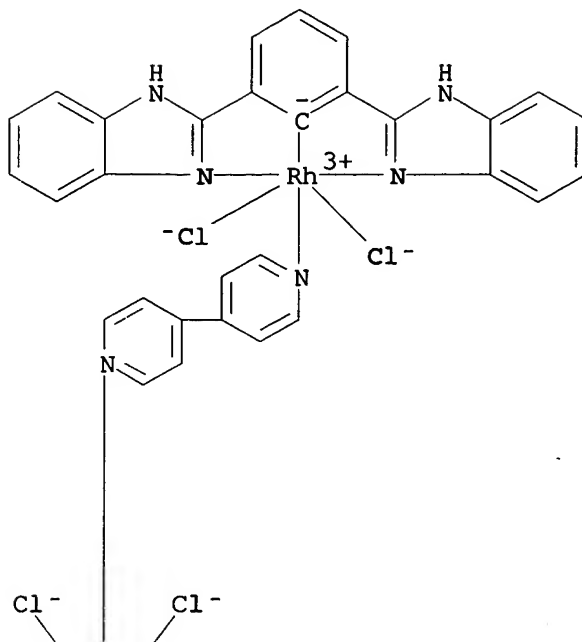


RN 250579-52-3 HCAPLUS  
 CN Rhodium, bis[2,6-bis(1H-benzimidazol-2-yl-κN3)phenyl-κC]tetrachloro[μ-(pyrazine-κN1:κN4)]di- (9CI)  
 (CA INDEX NAME)

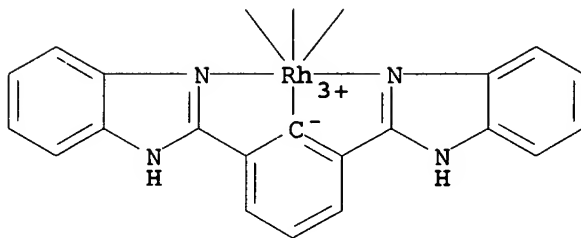


RN 250579-53-4 HCAPLUS  
 CN Rhodium, [ $\mu$ -(4,4'-bipyridine- $\kappa$ N1: $\kappa$ N1'))]bis[2,6-bis(1H-benzimidazol-2-yl- $\kappa$ N3)phenyl- $\kappa$ C]tetrachlorodi-(9Cl) (CA INDEX NAME)

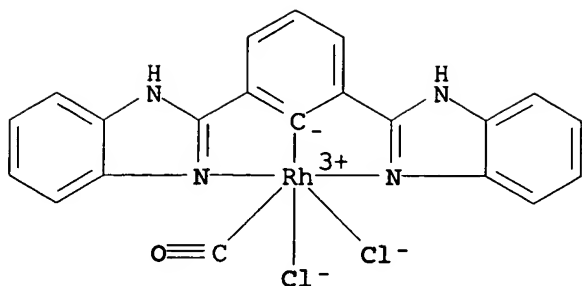
PAGE 1-A



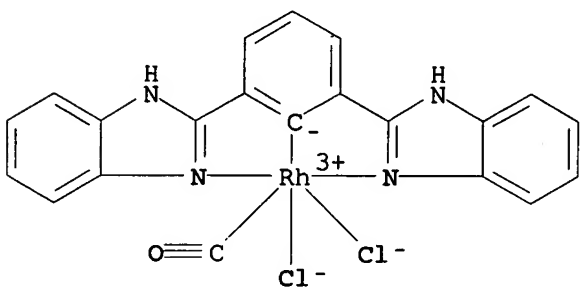
PAGE 2-A



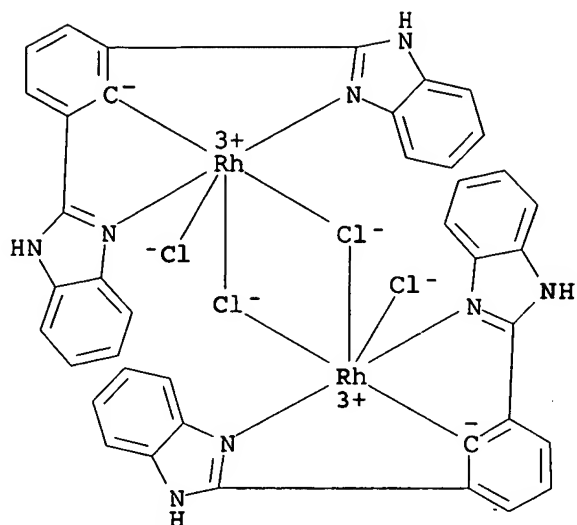
RN 250579-54-5 HCAPLUS  
 CN Rhodium, [2,6-bis(1H-benzimidazol-2-yl-κN3)phenyl-κC]carbonyldichloro-, (OC-6-12) - (9CI) (CA INDEX NAME)



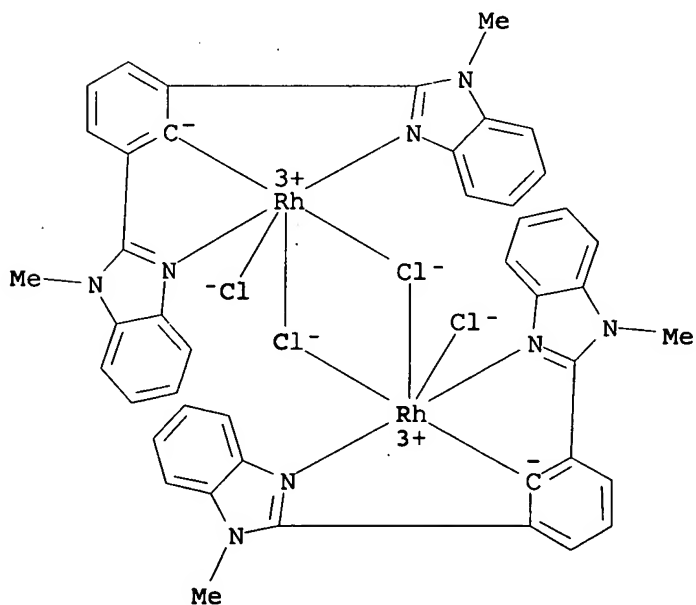
RN 250606-14-5 HCAPLUS  
 CN Rhodium, [2,6-bis(1H-benzimidazol-2-yl-κN3)phenyl-κC]carbonyldichloro-, (OC-6-43)- (9CI) (CA INDEX NAME)



IT 250579-42-1P 250579-45-4P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (preparation, metathesis with sodium iodide and halo-bridge cleavage reactions of)  
 RN 250579-42-1 HCAPLUS  
 CN Rhodium, bis[2,6-bis(1H-benzimidazol-2-yl-κN3)phenyl-κC]di-μ-chlorodichlorodi- (9CI) (CA INDEX NAME)



RN 250579-45-4 HCAPLUS  
 CN Rhodium, bis[2,6-bis(1-methyl-1H-benzimidazol-2-yl-  
 κN3)phenyl-κC]di-μ-chlorodichlorodi- (9Cl) (CA  
 INDEX NAME)



CC 29-13 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 78  
 IT 250579-43-2P 250579-44-3P 250579-46-5P  
 250579-47-6P 250579-48-7P 250579-49-8P

250579-50-1P 250579-51-2P 250579-52-3P  
250579-53-4P 250579-54-5P 250579-57-8P  
250606-14-5P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)

IT 250579-42-1P 250579-45-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)  
(preparation, metathesis with sodium iodide and halo-bridge cleavage  
reactions of)

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L42 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1997:782900 HCAPLUS

DOCUMENT NUMBER: 128:128133

TITLE: Cyclometallated fragments as building blocks  
for self-assembly reactions

AUTHOR(S): Carina, Riccardo F.; Williams, Alan F.;  
Bernardinelli, Gerald

CORPORATE SOURCE: 30 quai Ernest Ansermet, Department of  
Inorganic, Analytical and Applied Chemistry  
and Laboratory of X-ray Crystallography,  
University of Geneva, CH 1211 Geneva 4, Switz.

SOURCE: Journal of Organometallic Chemistry (1997),  
548(1), 45-48

CODEN: JORCAI; ISSN: 0022-328X

PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Organometallic complexes have not hitherto been employed as  
building blocks in supramol. chemical, but they offer a number of  
interesting possibilities. Pd(II) acetate reacts with derivs. of  
1,3-bis(benzimidazol-2-yl)benzene (1) to give Pd(1-H)(OAc) which  
self-assembles to a mol. tricorn, but which may also undergo a 2nd  
cyclometalation to give [Pd2(1-2H)(OAc)2]. This species may be  
cleaved by acid to give [Pd2(1-2H)X2] (X = Br, OTs); the latter  
species react with hydroxyacetate to give [Pd2(1-2H)(HOCH2CO2)2]2.  
The crystal structure of this compound shows two Pd2(1-2H) fragments  
clipped together by four bridging hydroxyacetate ligands.

IT 148602-53-3

RL: RCT (Reactant); RACT (Reactant or reagent)  
(cyclopalladation by palladium acetate)

RN 148602-53-3 HCAPLUS

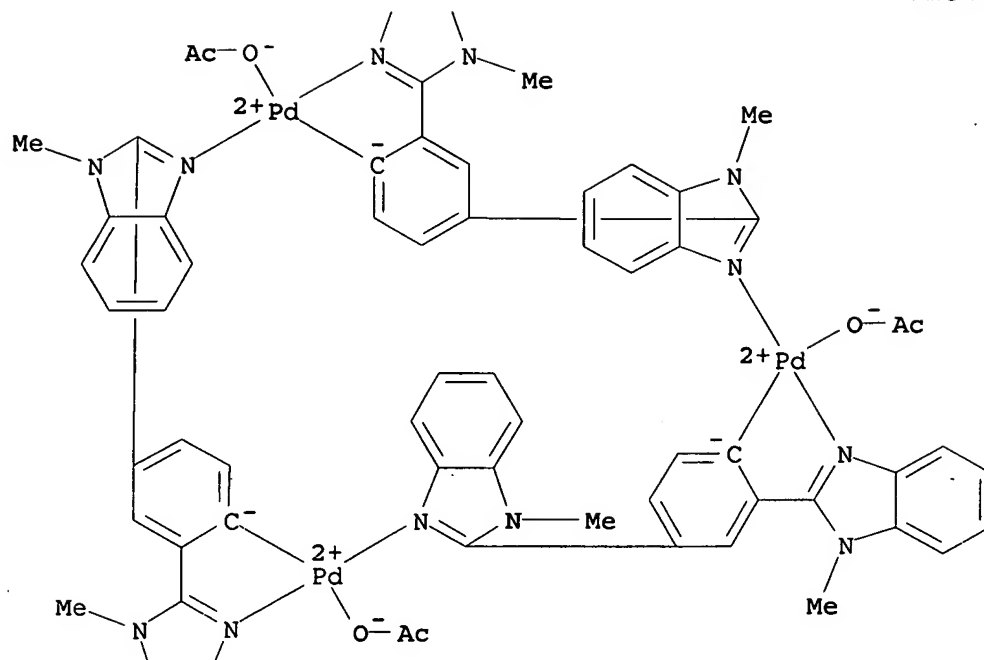
CN Palladium, tris(acetato-κO)tris[μ-[2,4-bis(1-methyl-1H-  
benzimidazol-2-yl-κN3)phenyl-κC]]tri-, stereoisomer  
(9CI) (CA INDEX NAME)



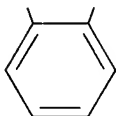
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IT 201870-58-8P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (preparation and crystal structure of)  
 RN 201870-58-8 HCAPLUS  
 CN Palladium, bis[μ-[4,6-bis(1-ethyl-1H-benzimidazol-2-yl-  
 κN3)-1,3-phenylene-κC:κC']]tetrakis[μ-  
 (hydroxyacetato-κO:κO')]tetra-, cyclo, compd. with  
 methanol (1:1) (9CI) (CA INDEX NAME)

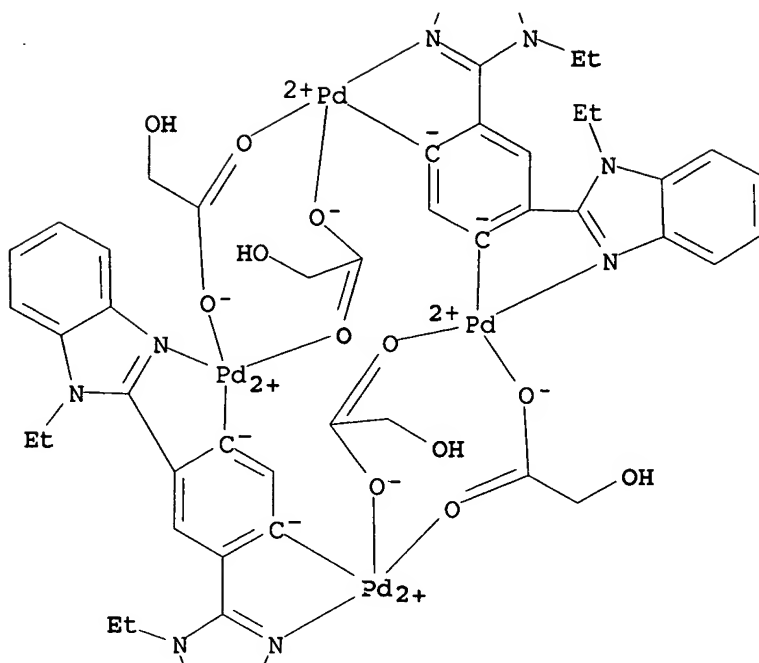
CM 1

CRN 201870-57-7  
 CMF C56 H52 N8 O12 Pd4  
 CCI CCS

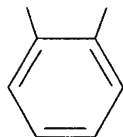
PAGE 1-A



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CM 2

CRN 67-56-1

CMF C H4 O

H<sub>3</sub>C-OH

IT 201870-53-3P

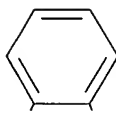
RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)  
(preparation and cyclopalladation by palladium acetate)

RN 201870-53-3 HCAPLUS

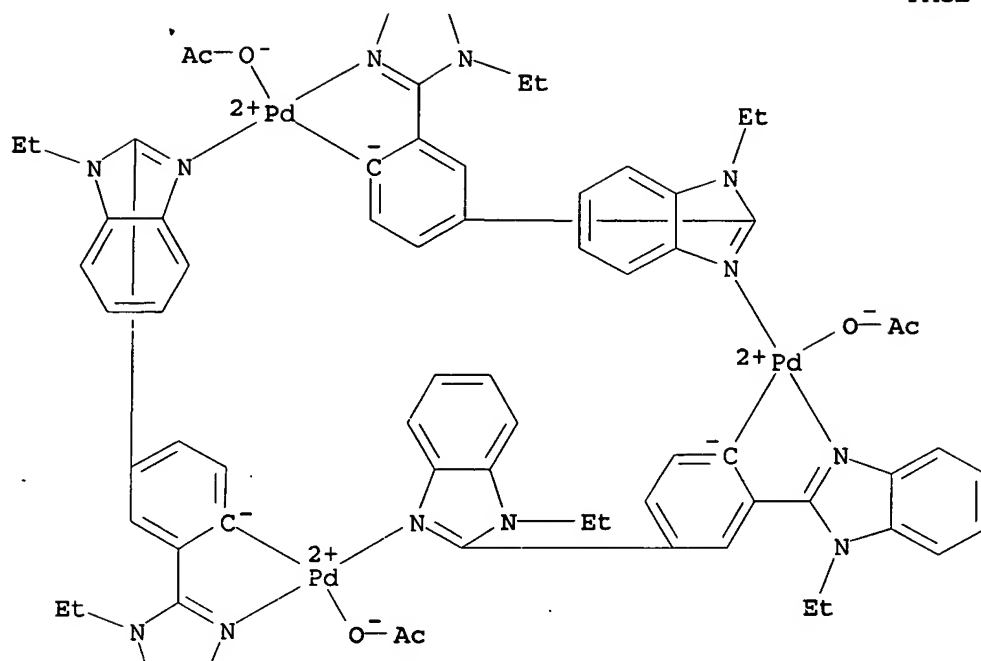
CN Palladium, tris(acetato-κO)tris[μ-[2,4-bis(1-ethyl-1H-  
benzimidazol-2-yl-κN3)phenyl-κC]]tri-, cyclo,

stereoisomer (9CI) (CA INDEX NAME)

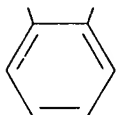
PAGE 1-A



PAGE 2-A

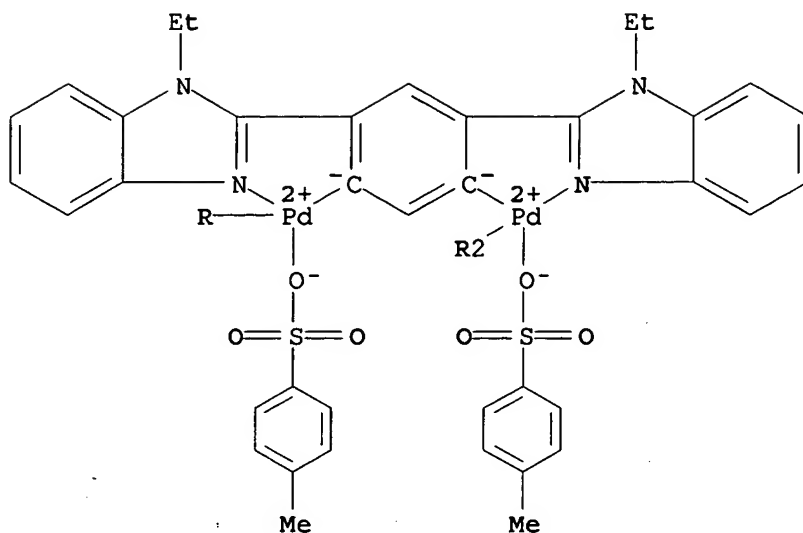


PAGE 3-A

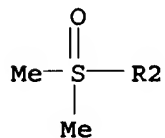
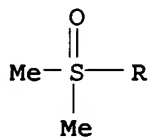


IT 201870-56-6P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (preparation and reaction with hydroxyacetate)  
 RN 201870-56-6 HCAPLUS  
 CN Palladium, [ $\mu$ -[4,6-bis(1-ethyl-1H-benzimidazol-2-yl- $\kappa$ N3)-  
 1,3-phenylene- $\kappa$ C: $\kappa$ C']]bis(4-methylbenzenesulfonato-  
 $\kappa$ O)bis[(sulfinyl- $\kappa$ S)bis[methane]]di- (9CI) (CA INDEX  
 NAME)

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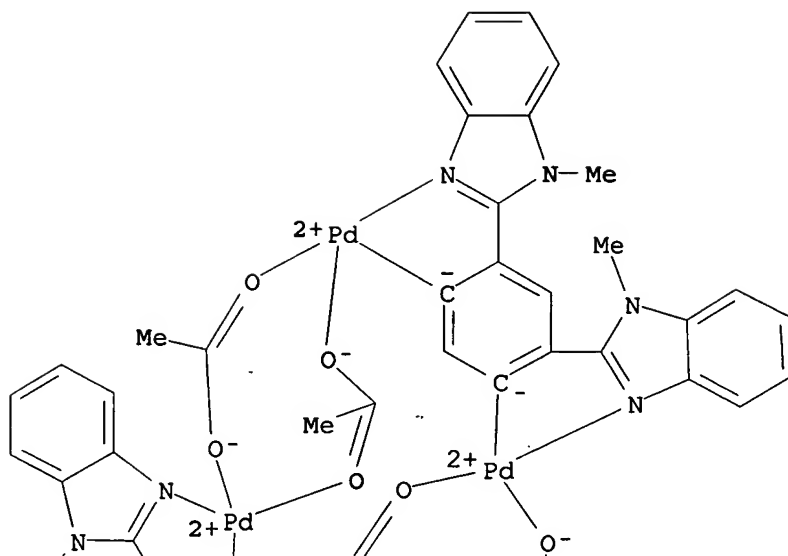
IT 201870-59-9P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and reaction with tosic acid)

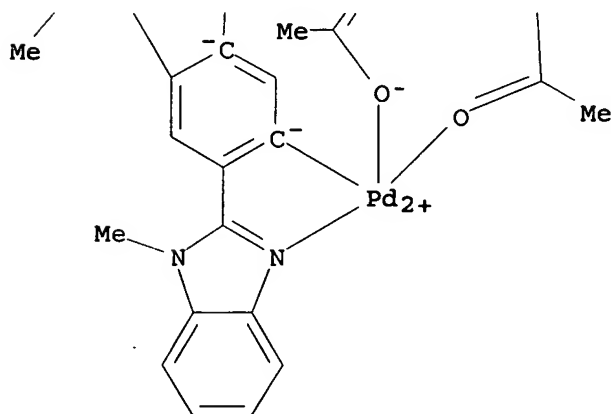
RN 201870-59-9 HCAPLUS

CN Palladium, tetrakis[μ-(acetato-κO:κO')]bis[μ-  
[4,6-bis(1-methyl-1H-benzimidazol-2-yl-κN3)-1,3-phenylene-  
κC:κC']]tetra-, cyclo (9CI) (CA INDEX NAME)

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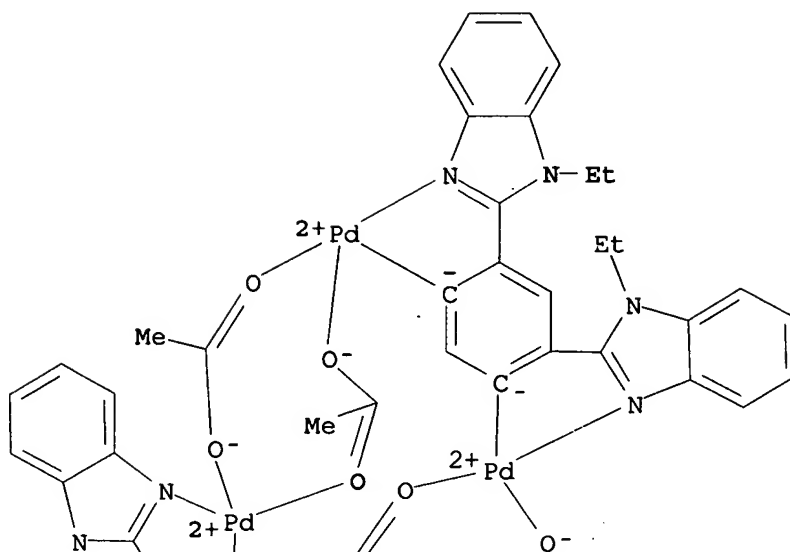


IT 201870-54-4P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (preparation and reactions with hydrobromic and tosic acids)  
 RN 201870-54-4 HCAPLUS  
 CN Palladium, tetrakis[μ-(acetato-κO:κO')]bis[μ-  
 [4,6-bis(1-ethyl-1H-benzimidazol-2-yl)-κN3]-1,3-phenylene-

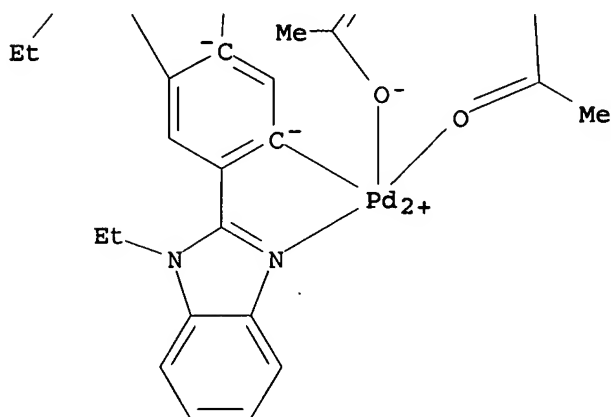


$\kappa C:\kappa C'$ ]tetra-, cyclo (9CI) (CA INDEX NAME)

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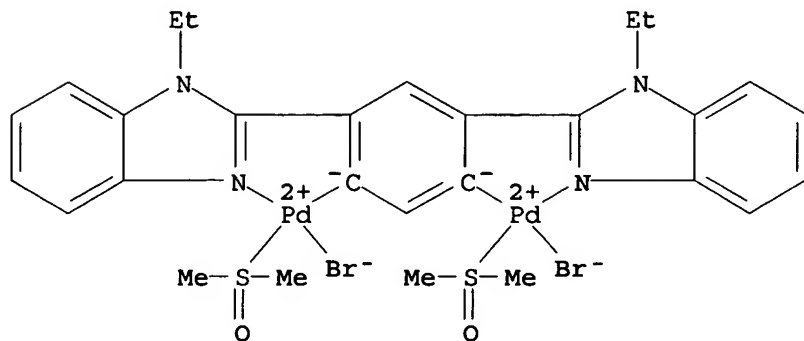
IT 201870-55-5P 201870-60-2P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)

RN 201870-55-5 HCAPLUS

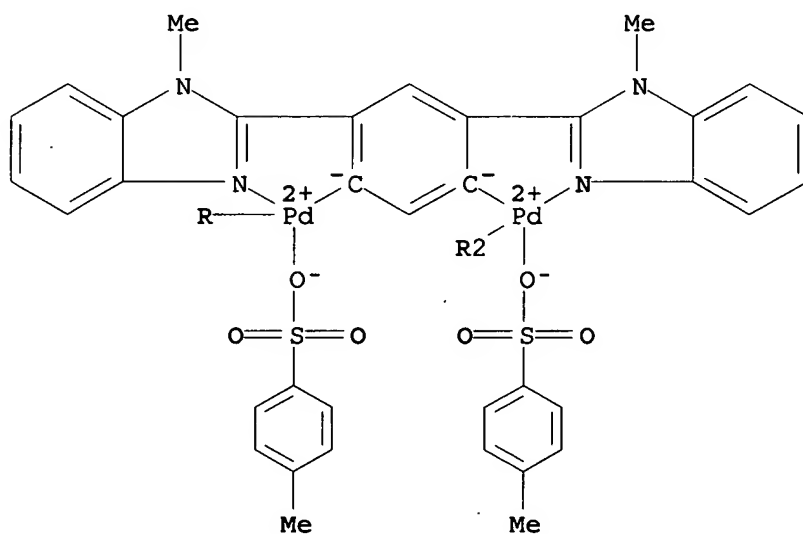
CN Palladium, [ $\mu$ -[4,6-bis(1-ethyl-1H-benzimidazol-2-yl)- $\kappa N3$ ]-

1,3-phenylene- $\kappa\text{C}:\kappa\text{C}'$ ]]dibromobis[(sulfinyl- $\kappa\text{S}$ )bis[methane]]di- (9CI) (CA INDEX NAME)

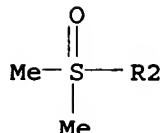
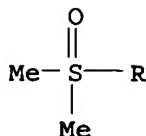


RN 201870-60-2 HCAPLUS  
 CN Palladium, [ $\mu$ -[4,6-bis(1-methyl-1H-benzimidazol-2-yl- $\kappa\text{N3}$ )-1,3-phenylene- $\kappa\text{C}:\kappa\text{C}'$ ]]bis(4-methylbenzenesulfonato- $\kappa\text{O}$ )bis[(sulfinyl- $\kappa\text{S}$ )bis[methane]]di- (9CI) (CA INDEX NAME)

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CC 29-13 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 75

IT 148602-53-3  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (cyclopalladation by palladium acetate)

IT 201870-58-8P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (preparation and crystal structure of)

IT 201870-53-3P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (preparation and cyclopalladation by palladium acetate)

IT 201870-56-6P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (preparation and reaction with hydroxyacetate)

IT 201870-59-9P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and reaction with tosic acid)

IT 201870-54-4P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (preparation and reactions with hydrobromic and tosic acids)

IT 201870-55-5P 201870-60-2P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L42 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

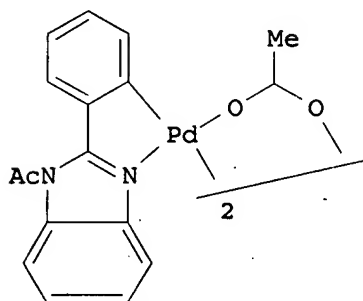
ACCESSION NUMBER: 1996:585029 HCAPLUS

DOCUMENT NUMBER: 125:276154

TITLE: A way to obtain cyclopalladation of  
 unsubstituted 2-phenylimidazole derivatives

AUTHOR(S): Zamora, Felix; Luna, Santiago; Amo-Ochoa,  
 Pilar; Martinez-Cruz, Luis Alfonso; Vegas,  
 Angel

CORPORATE SOURCE: Dep. Quimica Inorganica, Univ. Autonoma  
 Madrid, Madrid, 28049, Spain  
 SOURCE: Journal of Organometallic Chemistry (1996),  
 522(1), 97-103  
 CODEN: JORCAI; ISSN: 0022-328X  
 PUBLISHER: Elsevier  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 125:276154  
 GI



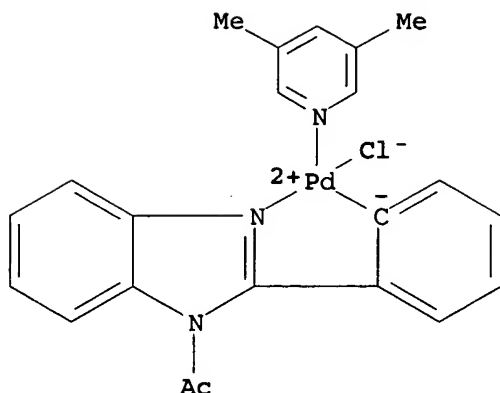
AB This work shows the difficulties of obtaining cyclopalladated complexes with 2-phenylimidazole and 2-phenylbenzimidazole as ligands. The protection of the NH group in the heterocycle with an acetyl group gave several cyclopalladated complexes of both ligands. The x-ray structure of the dimeric acetate-bridge complex of N-acetyl-2-phenylbenzimidazole I is described. The subsequent displacement of the protective group affords a monomeric cyclopalladated complex of 2-phenylbenzimidazole, as well as a coordination complex of this ligand.

IT 182481-18-1P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (preparation and deprotection of)

RN 182481-18-1 HCAPLUS

CN Palladium, [2-(1-acetyl-1H-benzimidazol-2-yl)phenyl]chloro(3,5-dimethylpyridine)-, (SP-4-4)- (9CI) (CA INDEX NAME)

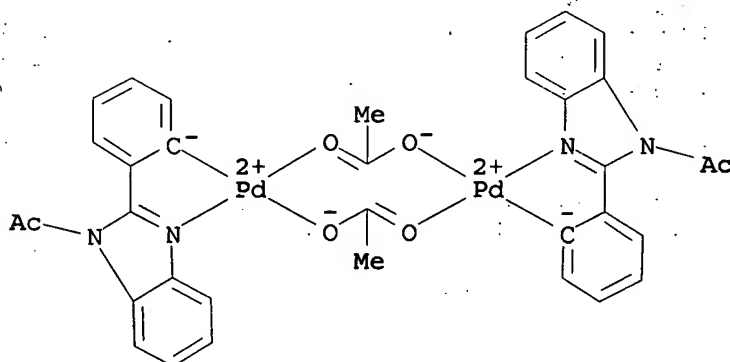


IT 182699-11-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (preparation of)

RN 182699-11-2 HCAPLUS

CN Palladium, bis[μ-(acetato-O:O')]bis[2-(1-acetyl-1H-benzimidazol-2-yl)phenyl]di-, stereoisomer (9CI) (CA INDEX NAME)

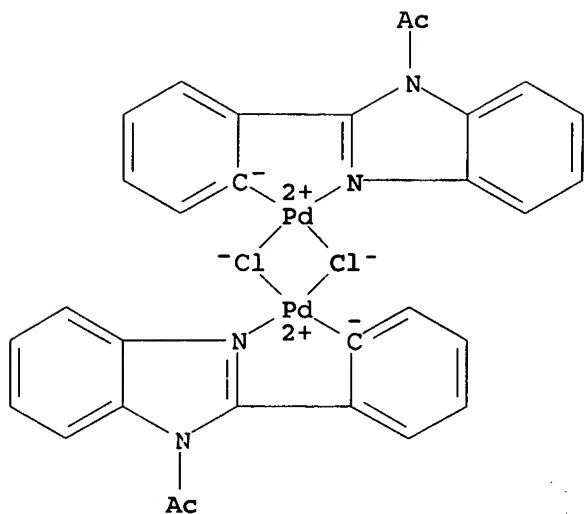


IT 182481-16-9P 182481-17-0P 182481-19-2P

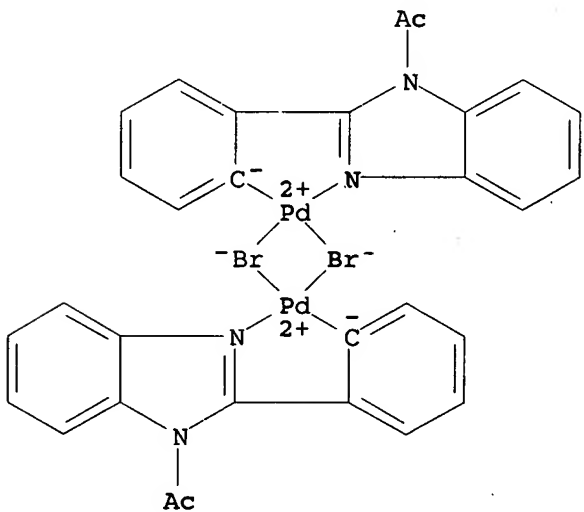
RL: SPN (Synthetic preparation); PREP (Preparation) (preparation of)

RN 182481-16-9 HCAPLUS

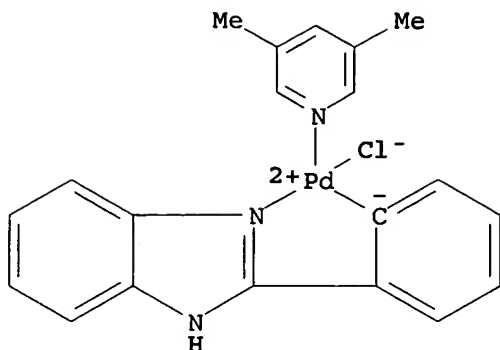
CN Palladium, bis[2-(1-acetyl-1H-benzimidazol-2-yl)phenyl]di-μ-chlorodi- (9CI) (CA INDEX NAME)



RN 182481-17-0 HCAPLUS  
 CN Palladium, bis[2-(1-acetyl-1H-benzimidazol-2-yl)phenyl]di-μ-bromodi- (9CI) (CA INDEX NAME)



RN 182481-19-2 HCAPLUS  
 CN Palladium, [2-(1H-benzimidazol-2-yl)phenyl]chloro(3,5-dimethylpyridine)-, (SP-4-4)- (9CI) (CA INDEX NAME)

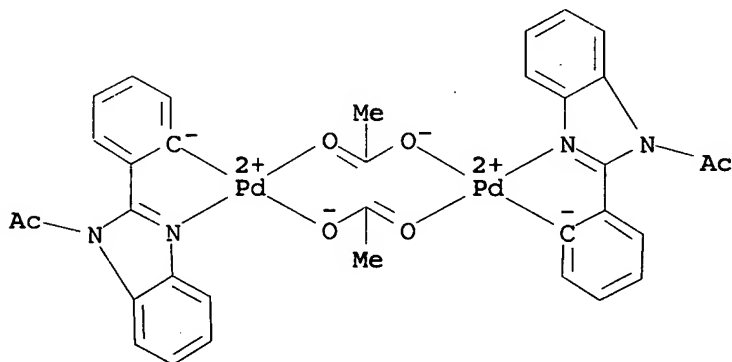


IT 182481-14-7P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation);  
PREP (Preparation); RACT (Reactant or reagent)  
(preparation, crystal structure and reaction of)

RN 182481-14-7 HCAPLUS

CN Palladium, bis[μ-(acetato-O:O')]bis[2-(1-acetyl-1H-benzimidazol-2-yl)phenyl]di-, stereoisomer (9CI) (CA INDEX NAME)



CC 29-13 (Organometallic and Organometalloidal Compounds)  
Section cross-reference(s): 75

IT 182481-18-1P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)  
(preparation and deprotection of)

IT 182699-11-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)  
(preparation of)

IT 182481-15-8P 182481-16-9P 182481-17-0P

182481-19-2P 182481-20-5P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)

IT 182481-14-7P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation);

PREP (Preparation); RACT (Reactant or reagent)  
(preparation, crystal structure and reaction of)

L42 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1996:360135 HCAPLUS

DOCUMENT NUMBER: 125:168284

TITLE: Synthesis and NMR structural analysis of  
several orthopalladated complexes of  
substituted benzo-imidazole, -oxazole and  
-thiazole and study of two polymorphic  
crystals

AUTHOR(S): Navarro-Ranninger, Carmen; Zamora, Felix;  
Martinez-Cruz, L. Alfonso; Isea, Raul;  
Masaguer, Jose R.

CORPORATE SOURCE: Departamento de Quimica Inorganica, Facultad  
de Ciencias, Universidad Autonoma de Madrid,  
Madrid, 28049, Spain

SOURCE: Journal of Organometallic Chemistry, (1996),  
518(1-2), 29-36

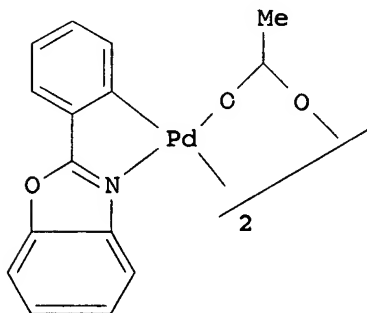
CODEN: JORCAI; ISSN: 0022-328X

PUBLISHER: Elsevier

DOCUMENT TYPE: Journal

LANGUAGE: English

GI



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AB The full assignation of  $^1\text{H}$  and  $^{13}\text{C}$  NMR parameters using both homo- and hetero-nuclear two dimensional spectroscopy techniques (COSY, HMQC and HMBC) allows the determination of the electronic properties in cyclopalladated complexes, e.g., I, obtained by reaction of N-methyl-2-phenylbenzimidazole (a), 2-phenylbenzothiazole (b) and 2-phenylbenzoxazole (c) with Pd salts. The attempts to sep. the anti and syn isomers (detected by NMR) gave two different kinds of crystal for the 2-phenylbenzoxazole Pd complex, I (1c) (yellow and orange). The x-ray diffraction study of these crystals indicates the formation of two polymorphic phases both in anti disposition.

IT 179991-53-8P 179991-56-1P 179991-57-2P  
180182-47-2P

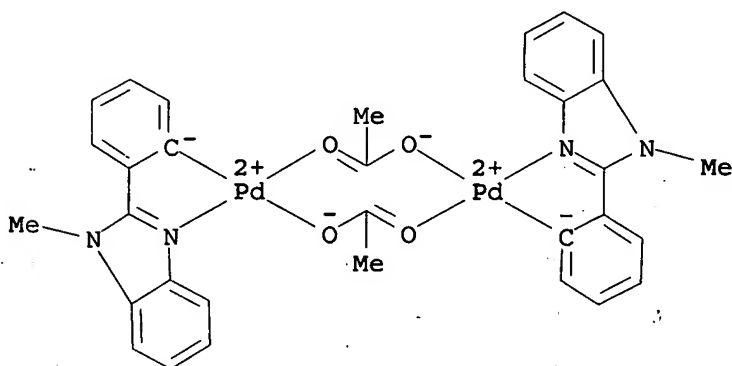
RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)



(synthesis and NMR structural anal. of several orthopalladated complexes of substituted benzo-imidazole, -oxazole and -thiazole)

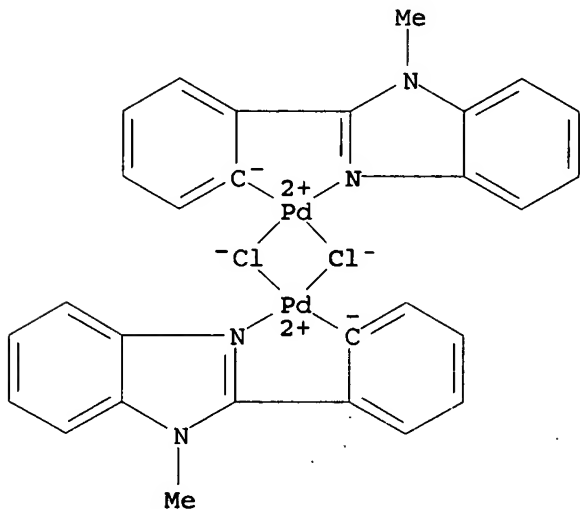
RN 179991-53-8 HCAPLUS

CN Palladium, bis[ $\mu$ -(acetato-O:O')]]bis[2-(1-methyl-1H-benzimidazol-2-yl)phenyl]di-, stereoisomer (9CI) (CA INDEX NAME)



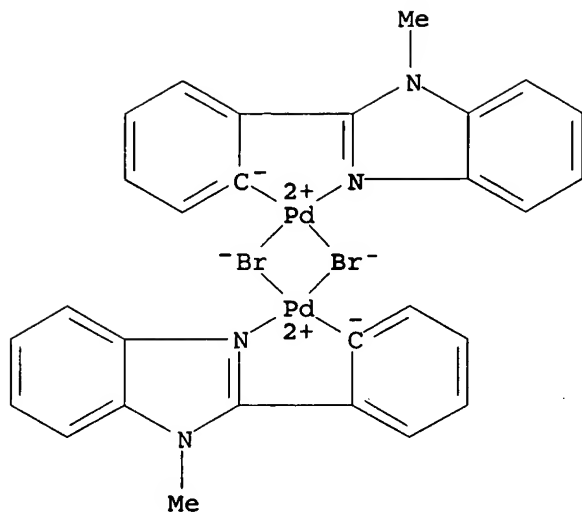
RN 179991-56-1 HCAPLUS

CN Palladium, di- $\mu$ -chlorobis[2-(1-methyl-1H-benzimidazol-2-yl)phenyl]di- (9CI) (CA INDEX NAME)

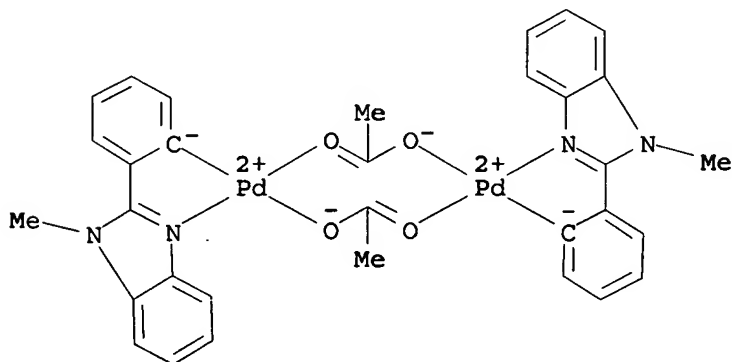


RN 179991-57-2 HCAPLUS

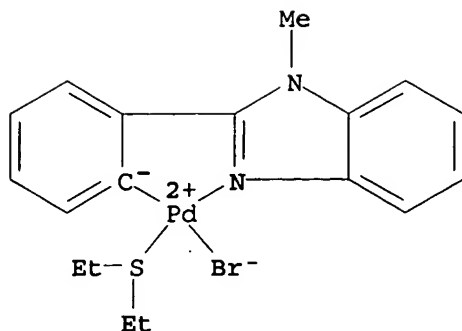
CN Palladium, di- $\mu$ -bromobis[2-(1-methyl-1H-benzimidazol-2-yl)phenyl]di- (9CI) (CA INDEX NAME)



RN 180182-47-2 HCAPLUS  
 CN Palladium, bis[μ-(acetato-O:O')]bis[2-(1-methyl-1H-benzimidazol-2-yl)phenyl]di-, stereoisomer (9CI) (CA INDEX NAME)



IT 179991-60-7P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (synthesis and NMR structural anal. of several orthopalladated  
 complexes of substituted benzo-imidazole, -oxazole and  
 -thiazole)  
 RN 179991-60-7 HCAPLUS  
 CN Palladium, bromo[2-(1-methyl-1H-benzimidazol-2-yl)phenyl][1,1'-  
 thiobis[ethane]]-, (SP-4-4)- (9CI) (CA INDEX NAME)



CC 29-13 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 75

IT 114906-49-9P 114906-50-2P 179991-53-8P 179991-54-9P

179991-56-1P 179991-57-2P 179991-58-3P

179991-59-4P 180182-47-2P 180182-48-3P 180182-49-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

(synthesis and NMR structural anal. of several orthopalladated complexes of substituted benzo-imidazole, -oxazole and -thiazole)

IT 179991-60-7P 179991-61-8P 179991-62-9P

RL: SPN (Synthetic preparation); PREP (Preparation)

(synthesis and NMR structural anal. of several orthopalladated complexes of substituted benzo-imidazole, -oxazole and -thiazole)

L42 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1993:449630 HCAPLUS

DOCUMENT NUMBER: 119:49630

TITLE: A trimeric coordination compound obtained by cyclopalladation and containing a hydrophobic cavity

AUTHOR(S): Ruettimann, Stephane; Bernardinelli, Gerald; Williams, Alan F.

CORPORATE SOURCE: Dep. Chim. Miner. Anal. Appl., Univ. Geneve, Geneva, CH-1211, Switz.

SOURCE: Angewandte Chemie (1993), 105(3), 432-4 (See also Angew. Chem., Int. Ed. Engl., 1993, 32(3), 392-4)

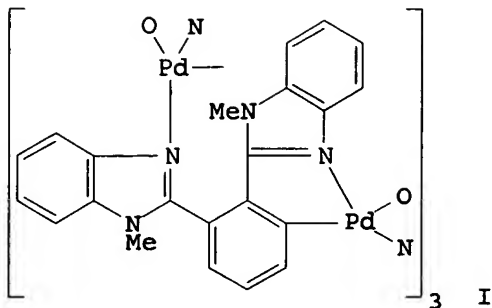
CODEN: ANCEAD; ISSN: 0044-8249

DOCUMENT TYPE: Journal

LANGUAGE: German

OTHER SOURCE(S): CASREACT 119:49630

GI



AB Cyclopalladation of 1,3-bis(1-methylbenzimidazol-2-yl)benzene with Pd(OAc)<sub>2</sub> in AcOH gave 88% title compound I. The crystal structure of I was determined

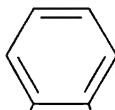
IT 148602-53-3P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation and crystal structure of)

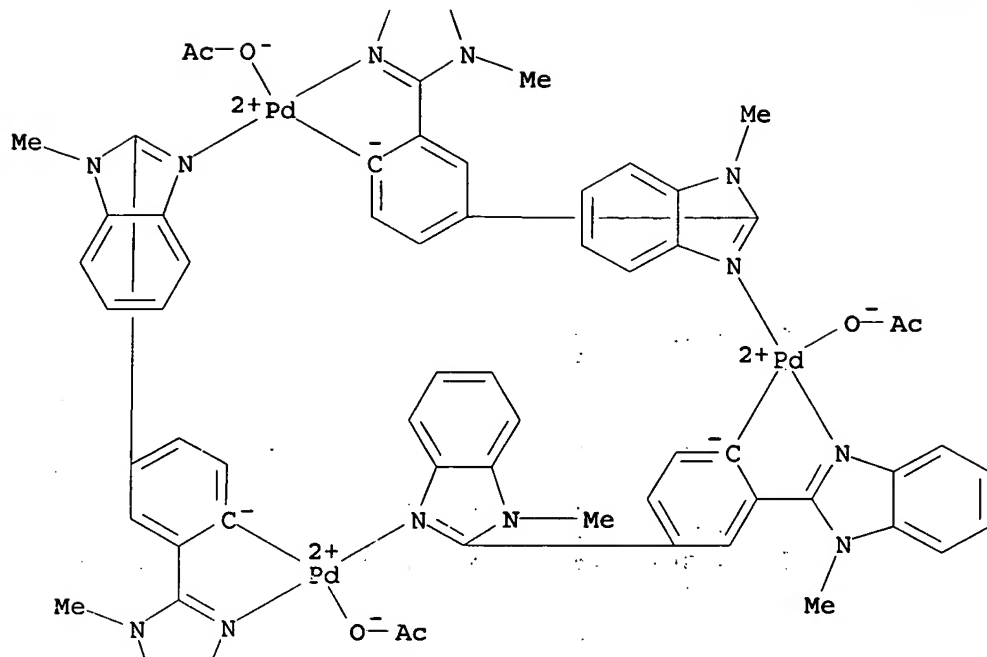
RN 148602-53-3 HCAPLUS

CN Palladium, tris(acetato-κO)tris[μ-[2,4-bis(1-methyl-1H-benzimidazol-2-yl-κN3)phenyl-κC]]tri-, stereoisomer (9CI) (CA INDEX NAME)

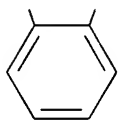
PAGE 1-A



PAGE 2-A



PAGE 3-A



CC 29-13 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 75  
 IT 148602-53-3P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (preparation and crystal structure of)

L42 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1988:423101 HCAPLUS

DOCUMENT NUMBER: 109:23101

TITLE: Cyclometalated compounds. III.  
 Cyclopalladation of phenylpyrazoles. Crystal  
 structure of (acetylacetonato) [2-[3-methyl-5-  
 phenyl-1-pyrazolyl]phenyl-C1,N2']palladium(II)  
 AUTHOR(S): Caygill, Graham B.; Steel, Peter J.  
 CORPORATE SOURCE: Chem. Dep., Univ. Canterbury, Christchurch, N.  
 Z.

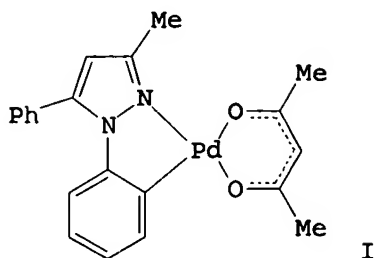
SOURCE: Journal of Organometallic Chemistry (1987),  
327(1), 115-23  
CODEN: JORCAI; ISSN: 0022-328X

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 109:23101

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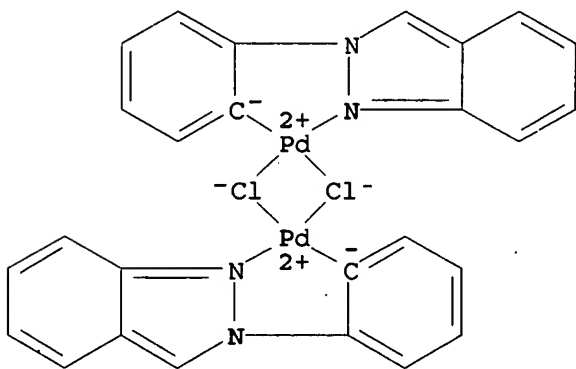
AB Six pyrazoles have been cyclopalladated by reaction with either lithium tetrachloropalladate or palladium acetate and the dimeric products converted to monomeric acetylacetonate complexes. The crystal structure of acetylacetonato[(pyrazolyl)phenyl]palladium complex I was determined

IT 114803-31-5P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and conversion of, to acetylacetonate complexes)

RN 114803-31-5 HCAPLUS

CN Palladium, di- $\mu$ -chlorobis[2-(2H-indazol-2-yl)phenyl]di- (9CI)  
(CA INDEX NAME)

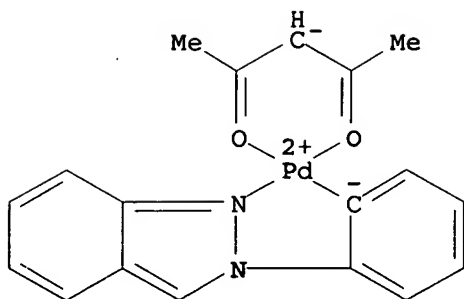


IT 114803-33-7P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)

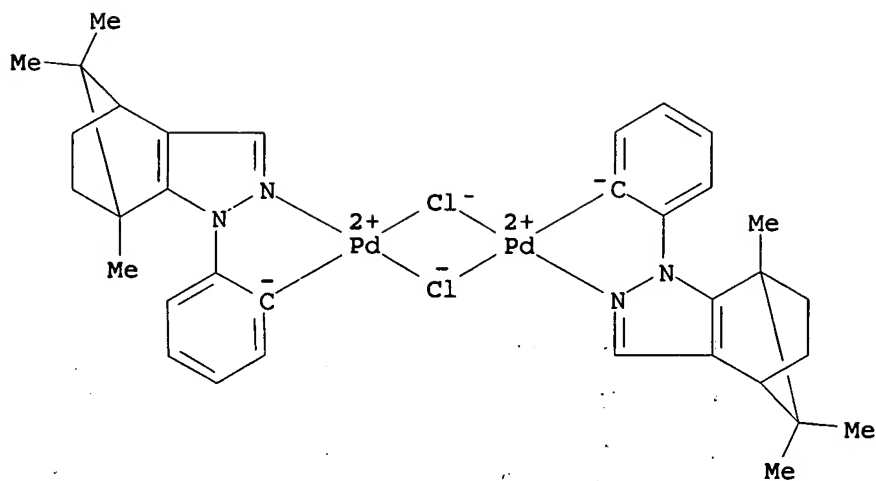
RN 114803-33-7 HCAPLUS

CN Palladium, [2-(2H-indazol-2-yl)phenyl] (2,4-pentanedionato-O,O')-,  
(SP-4-3)- (9CI) (CA INDEX NAME)



CC 29-13 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 75  
 IT 39046-05-4P 41707-88-4P 114803-29-1P 114803-30-4P  
 114803-31-5P 114803-32-6P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and conversion of, to acetylacetonate complexes)  
 IT 41707-94-2P 114760-15-5P 114760-16-6P 114760-18-8P  
 114803-33-7P 114803-34-8P 114824-59-8P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)

L42 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1987:496860 HCAPLUS  
 DOCUMENT NUMBER: 107:96860  
 TITLE: Chiral heterocyclic ligands. III. Structural  
 study of the cyclopalladation of  
 (4S,7R)-7,8,8-trimethyl-1-phenyl-4,5,6,7-  
 tetrahydro-4,7-methano-1H-indazole  
 AUTHOR(S): Watson, Andrew A.; House, Donald A.; Steel,  
 Peter J.  
 CORPORATE SOURCE: Chem. Dep., Univ. Canterbury, Christchurch, N.  
 Z.  
 SOURCE: Journal of Organometallic Chemistry (1986),  
 311(3), 387-97  
 CODEN: JORCAI; ISSN: 0022-328X  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 107:96860  
 AB Reaction of the ligand (4S,7R)-7,8,8-trimethyl-1-phenyl-4,5,6,7-  
 tetrahydro-4,7-methano-1H-indazole, (LH), with lithium  
 tetrachloropalladate gives a trans-Pd(LH)<sub>2</sub>Cl<sub>2</sub> complex, which on  
 further reaction undergoes cyclopalladation to [PdLCl]<sub>2</sub>. These  
 compds. were characterized spectroscopically and their structures  
 confirmed by single crystal x-ray analyses.  
 IT 109760-27-2P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (preparation and crystal structure of)  
 RN 109760-27-2 HCAPLUS  
 CN Palladium, di-μ-chlorobis[2-(4,5,6,7-tetrahydro-7,8,8-trimethyl-  
 4,7-methano-1H-indazol-1-yl)phenyl]di-, stereoisomer (9CI) (CA  
 INDEX NAME)



CC 29-13 (Organometallic and Organometalloidal Compounds)  
 IT 109760-27-2P 109789-00-6P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (preparation and crystal structure of)

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